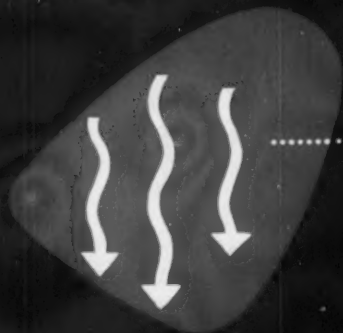


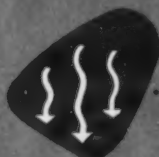
# The REFRIGERATION & AIRCONDITIONING Business

APRIL 1961



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**Use the  
'Worry Table'**



**Other AIR HANDLING Features:**

IMPROVED AIR FILTERING  
BOOSTS RESTAURANT BUSINESS 25%

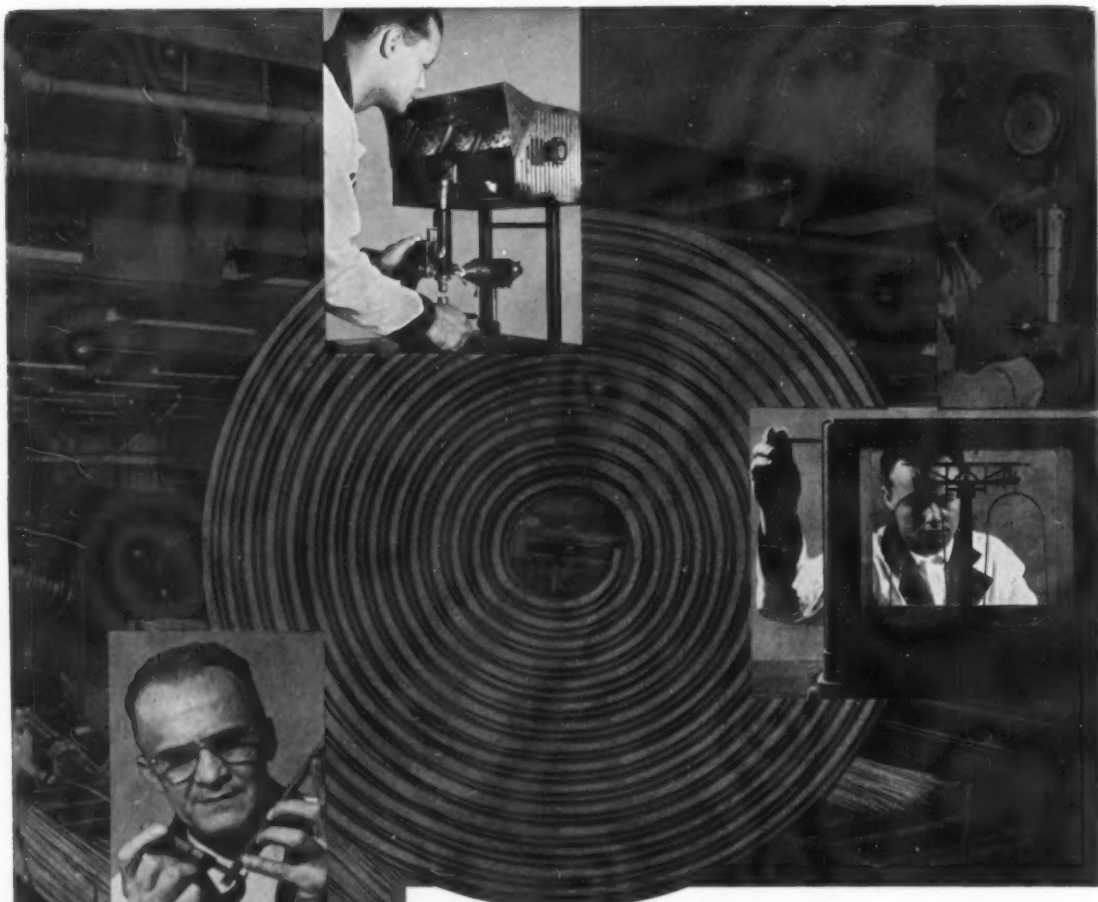
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CONDITIONING PROBLEMS IN OLD BUILDING

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AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

The magazine for the installing contractor-dealer of airconditioning  
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Viking's position as one of the nation's leading suppliers of thin-wall copper tubing has been achieved through the skill and dependability of the *people* at Viking.

Since Viking specializes in the manufacture of copper tubing for the refrigeration and air conditioning industry, Viking people are experts in the field. They know the importance of rigid adherence to the highest standards of temper, tolerance and uniformity to meet the customer's most exacting needs and specifications. They gear themselves to the needs of customers . . . adjusting and revising production and delivery schedules to conform to standard or emergency demands.

As a result, Viking quality and Viking service add up to a valuable *plus* for manufacturers of air conditioning and refrigeration units and coils.

The *people* at Viking will gladly discuss your copper tube requirements with you . . . you'll find the *plus* pays dividends.



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PRECISION DRAWN SEAMLESS COPPER TUBE

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## Thermo® EXPANSION VALVES

for all refrigerants from 1/4 to 200 tons



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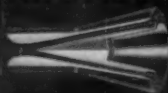
## SOLENOID VALVES

Sizes & Type for every application and refrigerant



R6-R2

## Venturi-Flow DISTRIBUTORS



wide application . . . low  
pressure drop . . . any  
position . . . one-piece  
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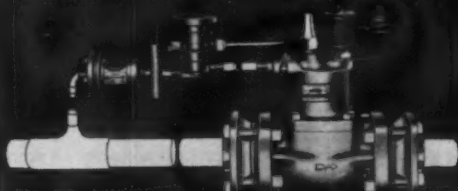
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## Float SWITCHES

for trouble  
free liquid  
level control

## P.O.S. PILOT OPERATED THERMO® VALVE

with integral solenoid stop . . . for larger installations



FOR AIR CONDITIONING  
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**ALCO** VALVES • CONTROLS  
STRAINERS • DISTRIBUTORS  
FOR EVERY APPLICATION—DIRECT EXPANSION OR  
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## REFRIGERANT STRAINERS

maximum Screen area—

Sizes & Type for every application

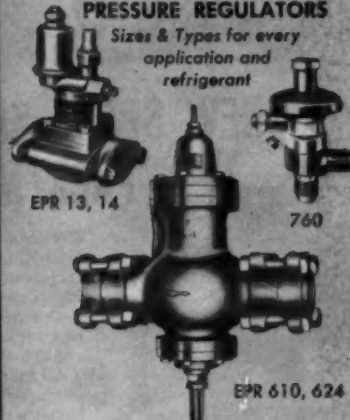


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## EVAPORATOR PRESSURE REGULATORS

Sizes & Types for every  
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## REFRIGERANT FILTER-DRIER

97% pure Dessicant

Block Form

Silica-Gel PA 400

and Molecular Sieve



ADK

Use and Specify ALCO Controls  
the one complete line designed and  
engineered for efficient trouble free  
performance.

See your Alco Wholesaler—Write for Specification Details



**ALCO VALVE CO.** 843 Kingsland Ave. • St. Louis 30, Mo.

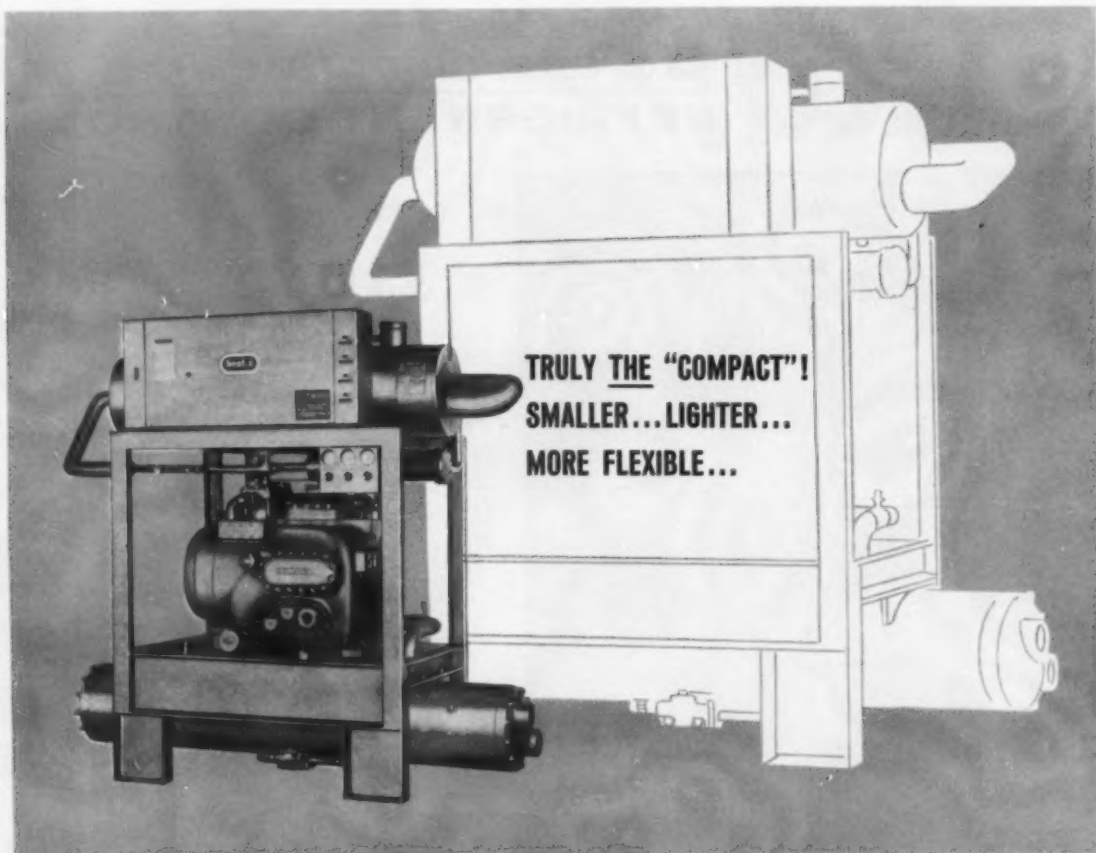
BUY SECURITY • BUY QUALITY • BUY ALCO

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors • Solenoid Valves  
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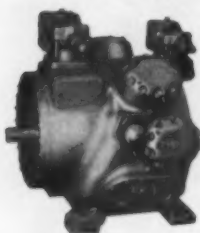
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THE REFRIGERATION & AIRCONDITIONING BUSINESS/APRIL 1961



## NEW SPACE SAVING **heat-x** PACKAGE CHILLERS PACK MIGHTY COOLING CAPACITIES



**POWERED BY THE  
FAMOUS BRUNNER  
MULTI-DRIVE COMPRESSORS,  
(HERMETIC OR  
DIRECT-DRIVE TYPE)  
RENOWNED FOR FIELD-  
PROVEN DEPENDABILITY**

Greater cooling capacity with much less bulk—that's the story on this new line of Heat-X units for chilled water air conditioning and industrial water cooling applications.

Note the superior features of these ruggedly reliable, top performing chillers, available in capacities from 20 through 100 tons, completely self-contained, ready to install:  
Exclusive, space-saving Inner-Fin® chillers and heat interchangers • Chilled water passages of non-ferrous construction • Cleanable condenser-receivers • Capacity modulation and unloaded start • Indicator lights.

All necessary components . . . often "extras" with others but always "standard" with Dunham-Bush . . . include: gauges, thermostats, reversible oil pump, oil failure control, high-low pressure control, relief and purging valves, solenoids, expansion valves, filter-drier, liquid sight glass, control panel.

Though it's infrequently needed, when service is necessary it's simple. Just a glance at Heat-X Package Chillers shows the reach-in easiness for quick and economical servicing.

And don't forget, every part of every Heat-X Chiller is backed by a single source manufacturer's responsibility.

Get the facts. Request Heat-X Form No. 8023A.

### Dunham-Bush, Inc.

WEST HARTFORD 10 • CONNECTICUT • U. S. A.

## DUNHAM-BUSH

AIR CONDITIONING • REFRIGERATION • HEATING • HEAT TRANSFER

WEST HARTFORD, CONNECTICUT • SOUTHBRIDGE, MASSACHUSETTS  
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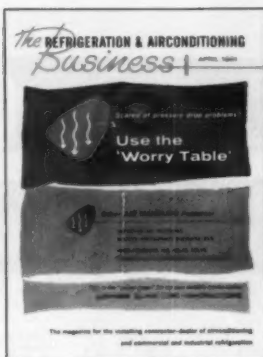
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APRIL 1961 THE REFRIGERATION & AIRCONDITIONING BUSINESS





**COVER FEATURE:** There's many a headache in air handling for contractors figuring airconditioning jobs. Instead of reaching for the aspirin bottle, turn to page 40 and start reading the four feature articles dealing with various phases of this problem. You'll profit by them.

## FEATURES

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ALARIC MAUSSER  
art director

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### 56 ONE-STEP INVOICING SAVES TIME

Milwaukee contractor finds new system speeds billings, reduces errors.

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### SERVICE CLINIC FOR CONTRACTORS

A monthly training guide and reference file for your service department

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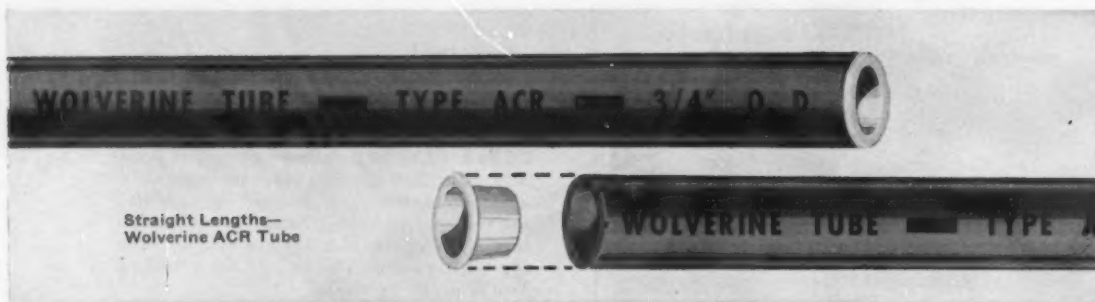
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**Wolverine copper refrigeration tube  
clean, dry and capped**

**THIS IS A PRODUCT EXPRESSLY FOR  
REFRIGERATION SERVICE ENGINEERS**



**WOLVERINE TUBE**

DIVISION OF

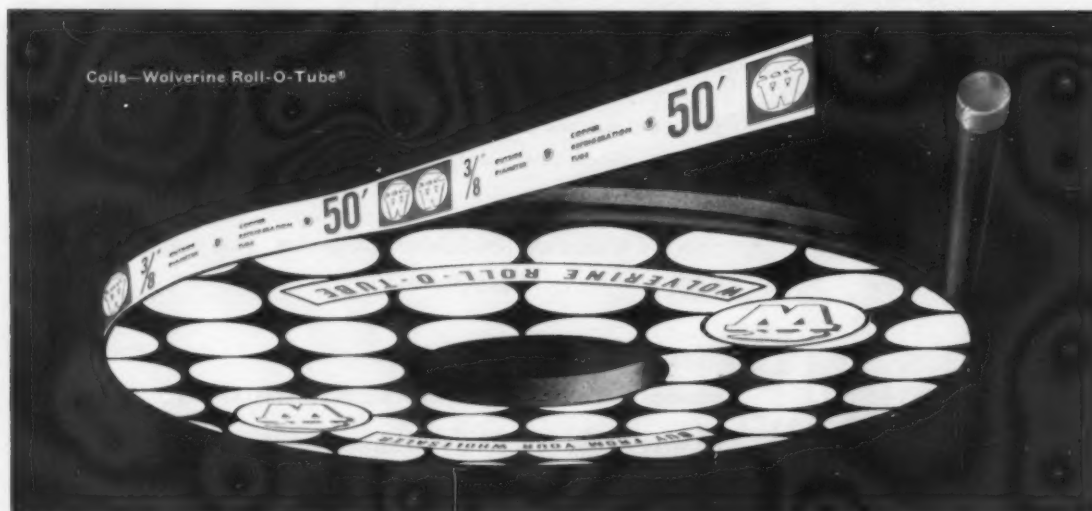
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PLANTS IN DETROIT, MICHIGAN AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES.  
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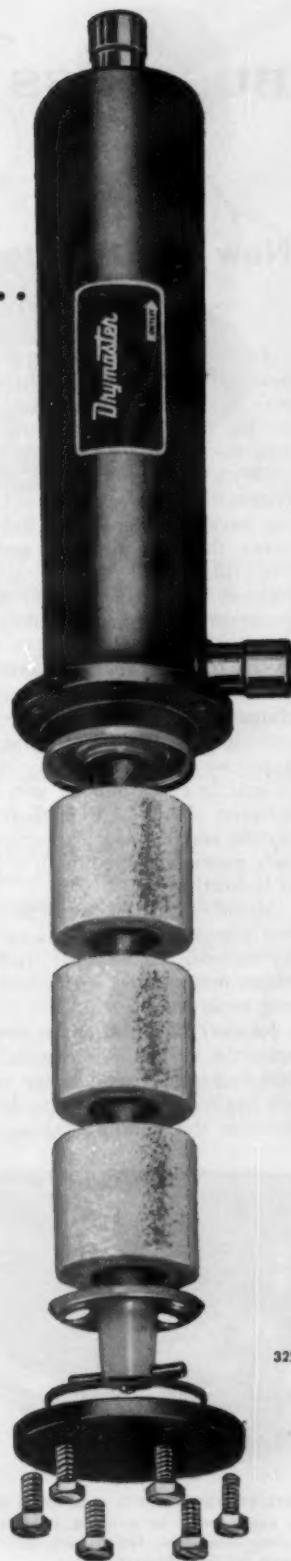
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# UNSURPASSED FILTERING AND DRYING with ADDED Convenience and Economy... It's the New Refillable Type *Drymaster*<sup>®</sup> Filter-Drier!

The superb, balanced filtering and drying performance of the new refillable type DRYMASTER comes from HI-FI Filter Block Desiccant: These fully activated, pressure molded briquettes quickly remove all harmful moisture, acid, sludge and micron-size foreign particles from the refrigeration system. HI-FI Filter Block Desiccant is non-dusting, non-channeling and is virtually unequalled in moisture adsorbing capacity. Its combination surface and internal depth filtering ability is unsurpassed by any other comparably sized drier in the field today.

And the new angle-type, refillable DRYMASTER Filter-Drier gives added convenience and economy, too. Once installed, the body shell of the Drier is in for the life of the system; only the desiccant is replaced. DRYMASTER Refillable Filter-Driers are designed for 5 ton through 165 ton capacities with 1/2" O.D. through 2 1/8" O.D. solder connections. End fittings are made of copper for easier soldering.

HI-FI Desiccant Briquettes, protected against shock by fibre glass padding, come packed in vacuum sealed cans ready to be installed quickly, easily, with no connections or joints to remake.



Write today for Catalog R-159 . . . contains complete information on all Streamline Refrigeration and Air-Conditioning products.



**MUELLER BRASS CO.**  
PORT HURON 14, MICHIGAN

VAMPCO ALUMINUM PRODUCTS, LTD., STRATHROY, ONTARIO  
Exclusive Canadian Representative for Mueller Brass Co.  
Air Conditioning and Refrigeration Products

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# BUSINESS *Briefs*

## New Worthington refrigeration unit moves firm into truck transport field

Perfection of a refrigeration-heating system for use on highway and railroad piggyback trailers has moved Worthington Corp. into the transportation field.

"With the introduction of this system for hauling perishable foods, we have completed the link between the food processor and the supermarket," said Randall W. Johnson, manager of the firm's transportation airconditioning and refrigeration department.

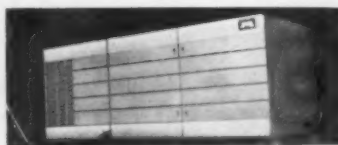
The truck refrigeration unit underwent year-long tests in every climate condition. It was proven, according to Johnson, to maintain a precise temperature, regardless of outside conditions, at any level between -10 to 75 F. Both refrigeration and heating are automatically provided as required, as well as defrosting.

Model TDU-800, a 2-unit system consisting of a diesel-engine-driven condenser unit and an evaporator unit, is engineered for long trips.

Johnson said the entire system not only weighs 300 pounds less than competitive models, but takes 50% less loading space. "Its design provides the light weight needed

for highway operation, plus shock and vibration resistance required for railroad operations."

This equipment will be sold through Worthington's 11 regional



**A PROTECTIVE CASING** encloses the diesel-engine-driven condensing unit, which is mounted under a trailer. It includes all power and refrigeration condensing equipment.

zone offices and 48 district offices. In addition, the 264 dealers now handling airconditioning and refrigeration products will sell truck refrigeration units.

Since service and parts stocking is essential to any product in the transportation field, Worthington has stationed engineers in all regional offices to provide 24-hour emergency service.



**THIS POWER TRAY** is mounted on slides for easy removal for servicing. It holds the engine, compressor, fan, battery, and fuel system for the refrigeration unit.

## D-B supplies coils for cargo passenger ships

Dunham-Bush, Inc. has received a \$250,000 contract to supply Bethlehem Steel Co. with marine cooling coils for three cargo passenger ships. Each vessel will be equipped with 27 coils with housing and drain pans to refrigerate 560,000 cu.ft. of cargo space.

Of the total space, all but 30,000 cu.ft. will carry bananas at 53 F or fresh fruits and vegetables at 35 F. The remaining space, handled by two D-B units, will carry frozen meats or shrimp at zero F.

## Frick branch moves

The Atlanta, Ga., branch office of Frick Co. has moved to 3166 Maple Dr., N.E. Warren L. Main is branch manager with C. P. Goree as consultant to the regional manager.

## Industry exports up 28%, says committee chairman

Sales of U.S. airconditioning and refrigeration products are making substantial gains throughout the world, according to N. A. Gardner, chairman of American Refrigeration Institute's foreign trade committee. He sees continued success in the future.

Export sales, Gardner reports, were up about 28% in 1960 over 1959. "This was due to growing industrialization in many countries," he said. "Export sales in our industry were from 5 to 10% higher than all other export sales last year."

## Southeast Sales is started

Harry Hagle and R. R. Briggs have formed Southeast Sales, Inc., a manufacturers representatives firm to cover Florida. Offices and warehousing facilities are in Winter Park.

*Continued on page 106*

## CALENDAR OF EVENTS

### April 23-26, 1961

Oil Heat Institute of America (Annual Convention)  
Statler-Hilton Hotel  
Washington, D.C.

### May 21-23, 1961

Northamerican Heating & Airconditioning Wholesalers (Spring Convention)  
The Queen Elizabeth Hotel  
Montreal, Canada

### February 12-15, 1962

12th Exposition of Air-Conditioning, Heating, and Refrigeration Industry  
Great Western Exhibit Center  
Los Angeles, Calif.

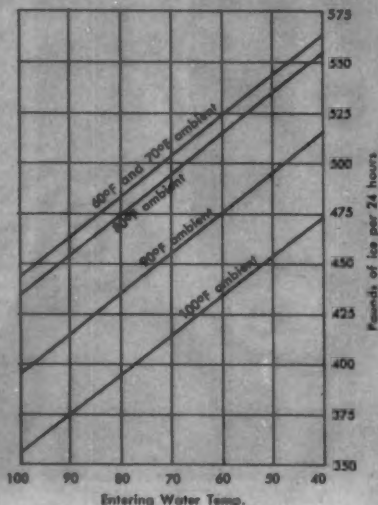


what makes  
**CRYSTAL TIPS ICE MAKERS**  
 easier to sell?



**22% MORE**  
**ICE PER DAY!**

MODEL B-500B — 24 HOUR ICE PRODUCTION CHART



Check this ice making capacity chart with any other ice maker of similar size and price and you'll discover Crystal Tips tops them all.

You can give your customers *more* ice per day when you deliver the Model B-500-B Crystal Tips ice maker. Check the ice making capacity chart (left) with that of any other ice maker of similar size and price. When you do, you'll see Crystal Tips is "tops". Crystal Tips is also the winner when you compare space requirements, dependability, serviceability and initial investment costs. All this PLUS bigger distributor profits are mighty BIG reasons why you can make more money selling Crystal Tips ice makers.



**MODEL B-500 Crystal Tips**  
**2-in-1 Ice Maker. Air and**  
**water cooled models available.**

This air-cooled Model B-500 is selling better than ever because it makes more ice per day. It also gives your customers a choice of TWO types of ice... large, round, clear ice cubes or tasty, hard, fast cooling ice chips. Write today for complete facts... mail coupon *now*.

You can make more money selling  
**Crystal Tips ice makers.**  
 Clip and mail coupon today  
 and we'll tell you how...



**Crystal Tips**  
 First name in automatic ice makers

**AMERICAN AUTOMATIC ICE MACHINE CO.**  
**1774 Park Ave. N.W., Faribault, Minnesota**

- ☐ I want to know more about Crystal Tips ice makers and their distributor profit opportunities.  
☐ Send literature on Crystal Tips ice makers.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

# ISOTRON 13



Many applications in the fast-moving field of cryogenics... especially those calling for low temperatures around  $-100^{\circ}\text{F}$ . . . can now take advantage of the greater economy of ISOTRON 13. With a boiling point at atmospheric pressure of  $-114.6^{\circ}\text{F}$ , ISOTRON 13 can be used in two- and three-stage systems with ISOTRON 12 (b.p.  $-21.6^{\circ}\text{F}$ .) and ISOTRON 22 (b.p.  $-41.4^{\circ}\text{F}$ .).

Mechanical refrigeration with ISOTRON 13 frequently costs less than cooling with cryogenic gases like

nitrogen and oxygen... and permits lower equipment cost than systems using other gases. The higher latent heat of ISOTRON 13 permits more compact equipment design.

ISOTRON 13, like ISOTRON 11, 12, 22, 113 and 114, is commercially available from conveniently located stocks across the country. Shipments are made in 5-, 23-, and 80-pound cylinders. Pennsalt will be glad to supply technical data and engineering assistance in handling and storing ISOTRON 13. Write for information.

**ISOTRON—The Key to Modern Living**



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Isotron Department  
**PENNSALT CHEMICALS CORPORATION**  
Three Penn Center  
Philadelphia 2, Pa.

**HOSPITAL  
ZONE**

for whisper-quiet air conditioning or heating service

**QUIET**



**1750K**

## Ingersoll-Rand MOTORPUMP

Here is a pump that gives you extremely quiet operation without a sacrifice in efficiency and still has all the proven features of other Ingersoll-Rand high speed, high efficiency Motorpumps!

These packaged units with non-overloading motors are available in  $\frac{3}{4}$  through  $7\frac{1}{2}$  horsepower sizes for deliveries to 500 gallons per minute and heads to 110 feet. Select a pump to

suit your conditions, take it off-the-shelf, hook it up and you're ready to go. Other high speed "K" line Motorpumps are available through 25 horsepower.

Check these ruggedly constructed "K" line Motorpumps in either 1750 or 3450 rpm speed. Note their features and see why they deliver continuous, trouble-free service. You will save time and trouble by using "K" line Motorpumps.

over a century



of pump progress

from the leading manufacturer . . .

# Ingersoll-Rand

Merchandising Division

11 Broadway, New York 4, N.Y.

Write for complete data on all Ingersoll-Rand pumps for air conditioning service . . . the complete Motorpump line, cradle-mounted pumps and horizontally-split pumps.

199A9

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/APRIL 1961



PPG Fiber Glass Pipe Insulation is slit lengthwise, slips easily on to pipe. Delaware Insulation Company installed 15,000 ft of PPG Pipe Insulation in the new Wilmington High School, reported excellent working characteristics.

## "We can install PPG Fiber Glass Pipe Insulation 15% faster than other pipe insulating materials"

says Mr. Anthony Kotowski, foreman, Delaware Insulation Company, Wilmington, Delaware

"A good worker can insulate 200 feet of pipe in one work day. But with PPG Pipe Insulation, he can insulate 230 feet in the same amount of time," reports Mr. Kotowski. "This helps us maintain tight construction schedules and saves money, too!

"We like PPG Fiber Glass Pipe Insulation because it's flexible and workable. We bend it around pipe hangers, mold it to shape easily, smooth it, then fasten and bind it," continued Mr. Kotowski as he discussed the PPG installation in a Wilmington High School. "You can't do that with other insulations. They're too brittle, require cutting, and sometimes break when you're working with them.

"PPG Pipe Insulation is easy on the hands, and it's not attacked by rodents. Of all the insulations on the market, PPG gives the neatest, quickest job."

### GET TOP RESULTS WITH PPG

Fast installation, excellent thermal insulation, long service life, low maintenance . . . all these advantages are yours with PPG Fiber Glass Pipe Insulation. It's available in a full range of sizes, with or without facing.

For full information, contact your nearest PPG Fiber Glass Sales Office, or write *Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Penna.*



**PITTSBURGH PLATE GLASS COMPANY**

Sales Offices: Atlanta, Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Kansas City, Louisville, Los Angeles, Miami, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis and Seattle.

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# 24 AIR-FLOW PATTERNS FROM EACH UNIT

...you adapt new  
Mueller Climatrol cooling  
or heat pump low sides  
with a screwdriver!



Talk about adapting to any situation! Each of these new units can be used in 24 different ways — adapting easily for use as a counterflow, upflow, or horizontal in either direction.

Available now from Mueller Climatrol: (1) Model 939 Air Conditioning Blower-Coil — in 2, 3, 4, 5 ton sizes ... (2) Model 339 Heat Pump Indoor Unit in 3 and 5 ton sizes ... and (3) Supplementary Electric Heat Package in 10 capacities from 20,500 to 82,000 BTU/hr.

They're made of modules . . . and you adapt them easily, with just a screwdriver. To change a unit, you simply separate the sections, then put them together for the air-flow pattern you want, using proper cutouts. The handsome door panel, trimmed in bright metal, covers both modules.

It's easy. And think what it saves you on inventory costs. See your Mueller Climatrol man for details on these exciting new units soon. Or write direct.



24 Air Flow Patterns from Each Unit — Count Them!



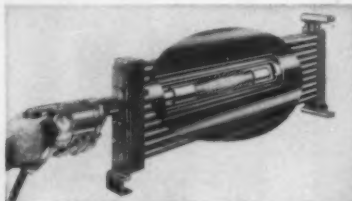
2025 West Oklahoma Ave., Milwaukee 1, Wisconsin • 1024 Westminster Ave., Alhambra, California

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"Here's why I always pick H & M water-cooled condensers

**...you can clean them safely  
because you clean them  
mechanically!**

"Time was when I used chemicals to clean out the scale and sludge in my water-cooled refrigeration systems. But soon I found out that the chemicals were doing damage not only to the condensers but the cooling tower and pump, too.



"Now I always buy Halstead & Mitchell Water-Cooled Condensers, because they can be cleaned safely

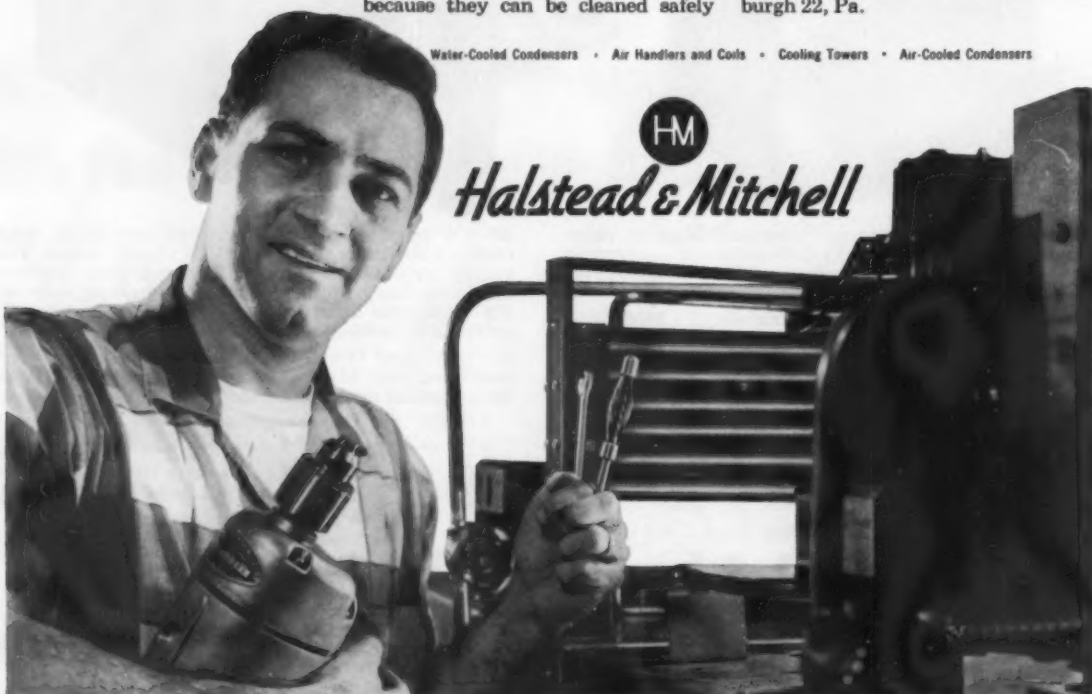
with a simple mechanical tool and an ordinary electric drill. The end plates remove easily to expose the water tubes."

Another good reason to choose H & M condensers: they give more liquid sub-cooling because of the double-tube design and true counterflow of refrigerant and water.

There are five different types, including models for sea water or poor water conditions, in capacities of  $\frac{1}{2}$  to 25 tons.

Call your parts wholesaler for more information, or write for Bulletin WC-300. Halstead & Mitchell Co., Dept. H-4, Bessemer Building, Pittsburgh 22, Pa.

Water-Cooled Condensers • Air Handlers and Coils • Cooling Towers • Air-Cooled Condensers



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APRIL 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

# 4 WAYS TO PROTECT YOUR SYSTEMS

against Moisture — Acids — Contaminants — Foreign Matter

The Finest Filter-Driers ever developed!

## M FILTER-DRIERS

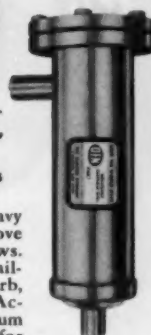
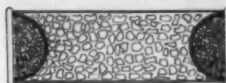


- Maximum drying with **Permasorb**<sup>®</sup>
- Maximum filtering with "MICROWALL"

Exclusive design seals Permasorb desiccant beads inside "Microwall" filter enclosure—keeps contaminants out of desiccant and out of system, for 100% drying and filtering effectiveness. One-piece spun all-brass shell is highly polished and lacquered. All sizes from 1/6 to 10 tons. Check coupon for Bulletin D-5.

3-in-1 Protection! Easy servicing!

## DEMOUNTABLE SHELLS and REPLACEABLE CARTRIDGES

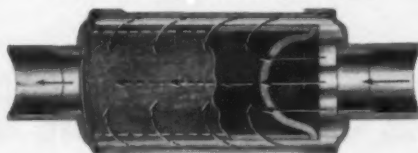


- 1 to 100 tons
- 3 interchangeable cartridges for drying, filtering, straining
- Choice of 5 desiccants

Shells are all-brass, with heavy forged tongue and groove flange and six bronze screws. Filter-drier cartridges available with Super Permasorb, Permasorb, Silica Gel, Activated Alumina or Calcium Chloride. Check coupon for Bulletin D-6.

PREVENT HERMETIC BURNOUTS! Install

## PERMACLEAN FILTERS



Keep oil, refrigerant and working parts clean by installing low-cost, high-capacity PERMACLEAN Filters in liquid and suction lines. Filter out particles down to 5 microns. All-brass construction. Many sizes up to 20 tons. Check Coupon for Bulletin G-19.

New line of low-priced, UL approved

## SILICA GEL DRIERS



Best-made, best-looking driers in their price class. Highly polished and lacquered one-piece spun copper shell, with Davison's PA-400 Silica Gel. Sizes from 1/4 to 7 1/2 tons. Check coupon for Bulletin DG-27.

Buy these extra-value DFN Driers and Filters at your wholesaler. Attach coupon to letter-head or postcard for bulletins and prices.



**THE MCINTIRE COMPANY**  
Livingston, New Jersey



### FILL IN AND MAIL

The McIntire Company, Livingston, N. J.

Please send free bulletins checked below.

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> Bulletin D-5 | <input type="checkbox"/> Bulletin G19   |
| <input type="checkbox"/> Bulletin D-6 | <input type="checkbox"/> Bulletin DG-27 |

Name.....

Company.....

Address.....

City..... State.....

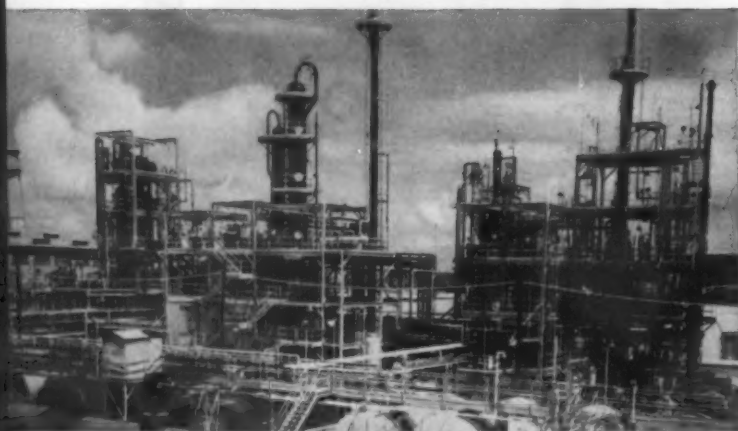
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***In the busy months ahead...***

**INSIST ON**

**gen**

**SUPER-DRY**



**"GENETRON" PRODUCTION CENTER**

"Genetron" Super-Dry Refrigerants are produced in this giant fluorochemical center in Baton Rouge, La. . . in Danville, Illinois . . . and will also soon be produced on the East Coast at a new plant now under construction at Elizabeth, N.J.

**genetron 11**  $\text{CCl}_3\text{F}$  ORANGE LABEL  
TRICHLOROMONOFUOROMETHANE

**genetron 12**  $\text{CCl}_2\text{F}_2$  WHITE LABEL  
DICHLORODIFLUOROMETHANE

**genetron 22**  $\text{CHClF}_2$  GREEN LABEL  
MONOCHLORODIFLUOROMETHANE

**genetron 113**  $\text{C}_2\text{Cl}_3\text{F}_3$  PURPLE LABEL  
TRICHLOROTRIFLUOROETHANE

**genetron 114**  $\text{C}_2\text{Cl}_2\text{F}_4$  BLUE LABEL  
DICHLOROTETRAFLUOROETHANE



# etron<sup>®</sup>

## REFRIGERANTS

*...and be sure of the best!*

General Chemical's advanced manufacturing techniques have helped bring new quality standards . . . new highs of purity and dryness for refrigerants. "Genetron" refrigerants are approved . . . accepted . . . and *preferred* as original charge and replacement in all types of modern refrigeration equipment.

See your wholesaler before the rush starts . . . make sure you're covered for all your refrigerant needs in the hurry months ahead. Be sure, also, to see the new "Genetron" Kit for field testing hermetic burnouts and the new pressurized "Genetron" 11 solvent cylinders for cleaning out mildly contaminated jobs; your "Genetron" wholesaler can tell you about this new "Genetron" service while you are there.

### **NEW! "GENETRON" 11 PRESSURIZED SOLVENT CYLINDER**

Special pressurized cylinders of "Genetron" 11 solvent provide an ideal means for cleaning out mildly contaminated systems after burnout.



### **GENERAL CHEMICAL DIVISION**

40 Rector Street, New York 6, N.Y.

circle 8 on reader service card

# BUSINESS *Trends*

## HOW OUR BUSINESS IS DOING

**SALES IN DECEMBER** (Bureau of Census) for air-conditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

DOWN 18% from a year ago  
DOWN 9% from previous month

**SALES FOR 1960** were:

UP 10% from 1959

**INVENTORIES IN DECEMBER** (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

UP 6% from a year ago  
DOWN 5% from previous month

**CURRENT LIABILITIES IN JANUARY** for business failures of 5 airconditioning contractors totaled \$119,000 (Dun & Bradstreet). Compare this to:

1 failure with \$10,000 liabilities a year ago  
5 failures totaling \$81,000 liabilities in December

## GENERAL BUSINESS INDICATORS

	Latest Period	Previous Period	% Change
<b>Housing Starts</b> (thousands)			Down
Month ending 1/31/61	72.0	72.5	0.7
<b>New Construction</b> , put in place (\$ billions)			Down
Month ending 1/31/61	3.8	4.4	13.6
<b>Unemployment</b> (% of labor force)			Down
Month ending 1/31/61	6.6	6.8	2.9
<b>Manufacturers' Inventories</b> (\$ billions)			Down
Month ending 12/31/60	53.7	54.0	5.6
<b>Manufacturers' Unfilled Orders</b> (\$ billions)			Down
Month ending 12/31/60	45.7	45.8	0.2
<b>Retail Sales</b> (\$ billions)			Down
Month ending 1/31/61	15.7	22.3	29.6
<b>Personal Saving</b> (\$ billions)			Down
Quarter ending 12/30/60	27.2	29.2	6.8
<b>Disposable Personal Income</b> (\$ billions)			Up
Quarter ending 12/30/60	358.1	357.5	0.2
<b>Gross National Product</b> (\$ billions)			Down
Quarter ending 9/30/60	503.5	505.0	0.29
<b>Industrial Production Index</b> (1957=100)			No Change
Month ending 1/31/61	102	102	

Source: U.S. Dept. of Commerce

## York president optimistic about industry future

Four billion dollars by 1970. That's the optimistic estimate for the installed value of commercial residential and airconditioning that was forecast by J. B. Elliott at York's distributor meeting last year. Elliott is president of York Div., Borg-Warner Corp.

Basing his estimate on a \$1.5 billion installed value for 1960, Elliott said, "If our industry just holds the same rate of growth, we should pass \$2 billion early in 1962; hit \$2.5 billion by 1965, and be close to \$4 billion by 1970."

Here's what other leaders in our industry and other industries have to say about 1961, the second year of the Soaring Sixties:

● **Recold Corp.** president H. T. Jarvis says his firm has long been regarded as a weathervane in the refrigeration and airconditioning industry. And, Recold just announced it expects sales to reach \$7.2 million this year, which would be up 20% over 1960.

● A 15% increase in residential home conditioning equipment orders over 1960 is reported by Paul H. Rutherford, general manager of General Motors' Delco Appliance Div. He says, "By 1970 a home without central comfort conditioning will be considered obsolete. That means not only heating and cooling, but humidity control and electrostatic air filtration."

● An expected 15% increase in auto airconditioner installations during 1961 will boost industry sales to the quarter-billion-dollar mark, according to M. C. Peterson, sales manager of Warner Electric Brake & Clutch Co. Peterson feels that by 1970 half of the nation's new cars will be equipped with cooling.

An example of broadening acceptance by owners of medium- and low-priced cars is that 2% of the 1960 compacts were airconditioned. Since cars did not come with cooling, this proved a boon to independent manufacturers of "hang on" units.

● "Business activity will begin to rise during the second quarter of 1961. Thereafter, the tempo of business activity will speed up, and will enter the beginning stages of a real boom by the end of the year," reports Dr. Gordon W. McKinley in a talk before the recent National Association of Home Builders (NAHB). Dr. McKinley is executive director, economic and investment research, Prudential Insurance Co. of America.

● One out of every five new dwelling units built in 1960 was an apartment, Dr. George Cline Smith told the NAHB. Dr. Smith is vice president and chief economist of F. W. Dodge Corp.

He continued, "There will be plenty of demand for new dwellings in the first half of the 60's and even more in the second half."

Announcing the newest addition to the Amprobe family

# NOW TEST VOLTS AMPS AND OHMS FOR \$29<sup>85</sup> ONLY

You read right. The AMPROBE JR. *Testmaster Kit* lets you read voltage on a calibrated scale (not just an indication), measure amps *without* interrupting service and test for resistance...at half the price you'd expect to pay for a tool of similar versatility

The Kit consists of the AMPROBE JR., an ohmmeter attachment, test leads, a leather carrying case and the AMPROBE *Energizer* ("splits" double-conductor cords for direct readings at outlets, or boosts the sensitivity of the instrument 10X for readings on fractional h.p. motors).

Pick the range that best fits your job from six rugged, lightweight models: 0-25 to 0-100 amp; either 0-125/150 or 0-150/600 volts AC; 25 ohms mid-scale. For more details about this newest addition to the most-complete family of pocket-sized, snap-around test instruments in the world, see your Distributor or write for Catalog sheet AAD-1.



PYRAMID INSTRUMENT CORP., LYNBROOK, N. Y.

Canada: Atlas Radio Corp., 50 Wingold Ave., Toronto.

**NOW...  
ONE MAN  
CAN  
TRACE  
CABLES  
FAST!**

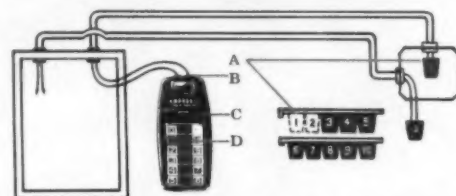


# CABLE TRACER

**N**ow you can trace conductors in cables and conduit— 10 times faster than ever before—and leave your helper free to finish other jobs quickly and profitably. A tracing system in itself, revolutionary new CABLE TRACER lets you search—and unmistakably identify—up to 10 separate circuits simultaneously, even in the dark and when color coding is absent or obscured by age and dirt. It can also test for opens and shorts.

CABLE TRACER is a completely self-powered precision tool which forever eliminates the need for clumsy buzzers. Designed by the makers of famous AMPROBE snap-around test instruments, new CABLE TRACER is simplicity itself to use. At the press of a button, a number lights up to identify the conductor. What's more, CABLE TRACER will pay for itself in saved labor costs after only three jobs. It is supplied with three test leads and ten Station Blocks in a belt-looped carrying case made of top-grain cowhide leather. Test-try CABLE TRACER today; your AMPROBE Distributor has a live-action demonstrator. Or write for free Catalog Sheet CT-10.

only \$3950



1. Simply plug one end of conductors to be traced into numbered Station Blocks (A).
2. Plug other ends into Receptacle (B) at top of CABLE TRACER.
3. Press Indicator Button (C).
4. The number on CABLE TRACER's Indicator Panel (D) corresponding to the Station Block at the other end of the conductor being traced (No. 1, in this case) lights up to provide identification—instantly, clearly, unmistakably! Using all the Station Blocks, ten conductors can be traced at one time.



**PYRAMID INSTRUMENT CORPORATION, LYNBROOK, NEW YORK** Canada: Atlas Radio Corp., 50 Wingold Ave., Toronto, Ont.



# NOT THIS | BUT THIS



here's how you can make **MORE PROFIT...**  
and have more satisfied customers!

Installing a complete new blower assembly the next time you have a blower repair job is your key to greater profit. Repairing an old blower is not always easy . . . it's time consuming and costly for you and your customer. By installing a Viking replacement blower assembly you'll be giving your customer a new, dependable air moving system that looks expensive but

is actually less than most rebuilding jobs with parts and labor. Viking Blower assemblies incorporate the latest engineering advances and assure you and your customer of complete service satisfaction.

Make more profit and at the same time create a more satisfied customer. Install a Viking Universal Replacement Blower on your next blower service call.

SEND FOR THIS *free*  
VIKING PARTS  
CATALOG TODAY.....



**Viking® AIR PRODUCTS**  
Division of the Lau Blower Company

5601 Walworth Avenue • Cleveland 2, Ohio

## VIKING AIR PRODUCTS

Division of the Lau Blower Company

5601 Walworth Ave. • Cleveland 2, Ohio

Please send us free of charge your complete, new "Viking Universal Replacement Blowers and Parts" Catalog.

NAME \_\_\_\_\_ ☐ Dealer

FIRM \_\_\_\_\_ ☐ Jobber

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



*Announcing*

# **Armstrong ARMAGLAS DUCT**

*a prefabricated duct system for residential and commercial heating and air conditioning*

**ALL-IN-ONE ARMAGLAS DUCT** combines dual temperature air duct, thermal insulation, vapor barrier, and sound absorber in one ready-to-install material.

**EFFICIENT AIR DUCT:** Armaglas Duct is a round, prefabricated, dual temperature duct that can replace insulated sheet metal duct at equal or lower cost. Round Armaglas Duct handles air efficiently with friction losses practically the same as circular metal duct.

**UNIFORM AND PERMANENT THERMAL INSULATION:** Armaglas Duct is preformed at the factory of fine glass fibers, bonded together into a strong tube of thermal insulation that is uniform and permanent in density and thickness. The glass fibers are non-corrosive, non-irritating, and completely resistant to air erosion.

**VAPOR BARRIER:** The aluminum pigmented plastic surface of Armaglas Duct forms an effective built-in vapor barrier. It is highly resistant to puncture and deterioration. It won't rot, corrode, or mildew.

**SOUND ABSORBER:** The glass fiber interior of Armaglas Duct readily absorbs airborne fan and

compressor noises. And because it is non-metallic, Armaglas Duct eliminates the annoying "booming" or "canning" that occurs when metal systems expand or contract.

**READY TO INSTALL:** Armaglas Duct comes ready to install. There's no time lost in preassembly—no folding or other preparation required with sheet metal. The six-foot sections are remarkably fast and easy to install. They can be cut with an ordinary knife and joined with simple sheet metal sleeve connectors. Forming elbows and other fabrications is fast and easy, too, and all joints are sealed with pressure-sensitive tape.

When the system is assembled, the job is done. The separate step normally required to insulate sheet metal duct is eliminated. The insulation is built in with modern, efficient Armaglas Duct.

For a free booklet with complete information on Armaglas Duct, write Armstrong Cork Company, 4404 Roth Avenue, Lancaster, Pennsylvania.



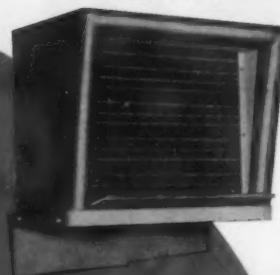
## **Armstrong ARMAGLAS DUCT**

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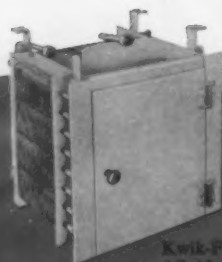
Coils, Pans, Coil  
and Pan Combinations



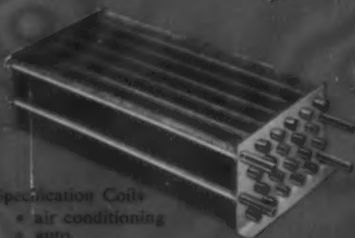
Automatic Defrost—  
TEH Models



Kwik-Freeze  
All-Aluminum  
Ice Makers



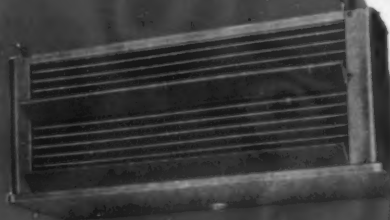
Specification Coils  
• air conditioning  
• auto  
• residential  
• commercial



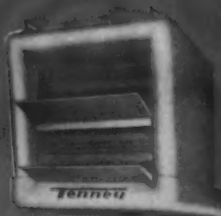
Sub-Line Mulsion Units



MX Unit Coolers  
(aluminum housing)



Angle-Air Unit Coolers



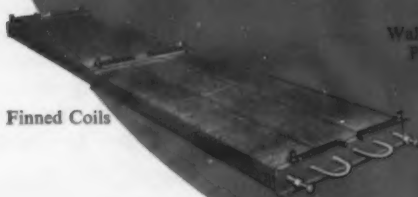
The Hustler  
(aluminum housing)



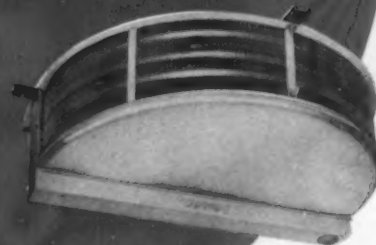
Wall Mounted  
Panel Units



Finned Coils



TW and TW5 Unit Coolers  
(aluminum housing)



**From the largest to the smallest...  
and everything in between!**

**One complete source for quality, service and variety**

Note: Special evaporators and condensers built to all industry specifications. Write for complete information.



Engineers and Manufacturers  
of Refrigeration and  
Environmental Equipment

**Tennet**  
ENGINEERING, INC.

1090 SPRINGFIELD ROAD, UNION, NEW JERSEY

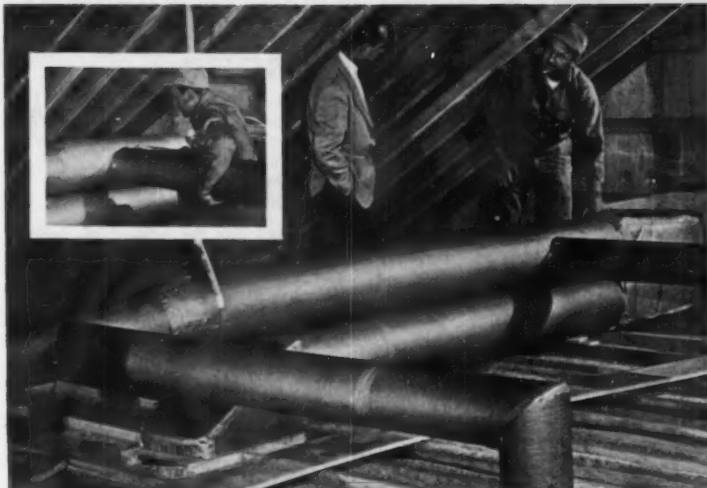
PLANTS: UNION, NEW JERSEY AND WILMINGTON, NORTH CAROLINA

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• from TV stations to garden apartments...

## "Prefab" Glass Fiber G-B Duct Proves Ideal for Commercial Duct Systems!



**CHICAGO FLORAL SHOP**—A substantial reduction in electrical bills convinced the operators of this floral shop that there's nothing better than G-B DUCT for air conditioning duct systems. The uniformly-thick, seamless walls of G-B DUCT hold heat gain to a minimum, thus allowing the cooling equipment to operate more efficiently.

### CLEVELAND TV STATION—

Elimination of noises was a must in this remodeling job which included a new air conditioning and heating system. Acoustically efficient G-B DUCT was the logical choice for the ductwork. Its all-glass-fiber construction soaks up noises before they're ever heard.



**KANSAS CITY GARDEN APARTMENTS**—Economy and speed of installation were two reasons why G-B DUCT was selected for this commercial duct job. Completely prefabricated at the factory, G-B DUCT comes in round 6' ready-to-use sections that can be installed in almost half the time required for insulated metal duct.

### LOS ANGELES MEDICAL CENTER—

Prevention of "cross-talk" noise between doctors' offices was one of the primary reasons for selecting G-B DUCT for this commercial duct installation. Because G-B DUCT is made entirely of insulation, encased in a vapor barrier sleeve, acoustical and thermal protection are "built-in".



Everything about this prefabricated glass fiber duct makes it ideal for commercial, institutional, as well as residential use. For additional product information, installation instructions and sample specs, write today.

**GUSTIN-BACON** Manufacturing Company   
228 W. 10th St., Kansas City, Mo.

# Drayer-Hanson Air Conditioning

275 TIMES!



## \$50 Million Dollar

### NEW TERMINAL AND AIRFIELD FACILITIES

## Los Angeles International Airport

D-H's POPULAR "FZ" - "V" - "H" - "AM" and "HRC" UNITS!  
NEW TERMINAL • TICKETING STRUCTURES • SATELLITE BOARDING

For Los Angeles Dept. of Airports—Joint Venture Architects and Engineers: Charles Luckman Associates, Welton Becket Associates, Paul R. Williams. General Contractor: Robert E. McKee. Mechanical Engineer: J. S. Hamel, Engineer. A/C Contractor: Climate Conditioning Co., Div. Paul Hardeman, Inc. D-H Sales Agent: Air Conditioning Supply Co.

(Brochure GAC 150.01 tells you why)



## drayer-hanson

DIVISION OF  
HI-PRESS AIR CONDITIONING OF AMERICA, INC.  
3301 Medford Street, Los Angeles 63, California  
(Cable: Cliconi, Los Angeles)

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## USEFUL Literature

**BALANCED COMFORT** is yours with the airconditioning system of Hi-Press Air Conditioning of America, Inc. It's achieved by complete integration of a central station unit, twin small pipe air system, and a twin pipe terminal unit. The bulletin gives illustrative, schematic, and featured treatment to each of the components, as well as sketches of the firm's pipe and fittings.  
circle 206 on reader service card

**HIGHLIGHTING** a specifications bulletin on the Series T "Turbo-master" is a full page of specs on various parts of the unit and on approximate dimensions and drawings from the suction and shaft ends. Issued by York Div., Borg-Warner Corp.  
circle 207 on reader service card

**INDUSTRIAL WATER COOLERS** are the subject of Bulletin 108 issued by Baltimore Aircoil Co., Inc. There is selection information, and description of three different models, including centrifugal-fan blow-through units, centrifugal-fan draw-through, and tubeaxial fan blow-through units.  
circle 208 on reader service card

**MOTORS** for part-winding starting are featured in Bulletin 1463, released by Century Electric Co. Speed-torque characteristics and connections for part-winding starting are plotted. The balance of the literature contains comments on starting currents and their reduction and inrush limits. Three types of the firm's motors' applications and features are discussed.  
circle 209 on reader service card

"YOU'LL GET A WORLD of satisfaction from a Ross-Temp automatic flaked ice machine," says Form RT-1-61. Product photos and specs on self-contained and continuous flow models and accessories. Sketches of special features also highlight the release.  
circle 210 on reader service card

**IN SIX COLORS** are "Jamolite" cold storage doors, reports Catalog Section 7(60) issued by Jamison Cold Storage Door Co. The doors are finished in white, ivory, salmon, blue, and blue-green. The bulletin offers several 4-color application photos and outline dimensions and specs on the plastic cooler and freezer doors.  
circle 211 on reader service card

**A CONDENSED CATALOG** of high vacuum components and equipment has been published by NRC Equipment Corp. The 8-page release summarizes the complete line of pumps, valves, gages, coaters, and other products.  
circle 212 on reader service card

**FULLY TRANSISTORIZED** is a sound level meter, publicizes Bulletin 1400E released by Korfund Co., Inc. The brochure also lists the battery-operated meter's advantages, design features, applications, specs, and accessories.  
circle 213 on reader service card

**NOW AVAILABLE** is a 20-page catalog describing Fedders Corp.'s "Fedair" Type F remote airconditioning units. The catalog contains information on the units, which are in free standing, recessed, overhead, and recessed overhead models.  
circle 214 on reader service card

Continued on page 79

**FREE**  
**SPECIAL OFFER**  
**FROM**  
**Ucon IKE:**  
**THE SHIRT**  
**OFF HIS**  
**BACK**



**For buying Ucon® Refrigerants in  
 125-lb. and 145-lb. cylinders**

With the big season coming up, now's the time to stock up on refrigerants... and buying 125-lb. and 145-lb. cylinders of Ucon Refrigerants is the smart, convenient way to do it. This larger size cylinder offers you economy and storage convenience... and to encourage you to prove it to *yourself*, Ucon IKE is pleased to make this stupendous offer:

**For a limited time only—April 1st through 30th—  
 yours FREE with the purchase of two 125-lb. or  
 145-lb. cylinders of Ucon Refrigerants:  
 A Gen-u-wine Ucon IKE Sport Shirt**

A handsome yellow checked, short sleeved "Van Heusen" sport shirt in comfortable cotton—the kind IKE wears on his vacation. Ideal for work, play, any day—from Northland to backyard hammock.

**To get your shirt:** Under the brass dust cap on the valve of every 145-lb. cylinder of Ucon Refrigerants (125-lb. cylinders of Ucon Refrigerant 22, too), you'll find a Ucon IKE Seal. Simply mail two of these seals, together with your name, and the name of your wholesaler on your company letterhead to: Ucon IKE, P.O. Box 1010, Grand

Central Station, New York 17, N. Y. Applications must be postmarked no later than April 30th, and no earlier than April 1, 1961. And don't forget to include your shirt size! (Small, Medium, Large or Extra-Large.) While you're at it, any comments you'd care to include on the Ucon Refrigerants line will be most welcome. As soon as we hear from you, your Ucon IKE Sport Shirt will be rushed on its way.

\*Remember—this offer is good from April 1st through April 30th only!

**For Economy & Convenience plus The Shirt Off Ucon IKE's Back—FREE  
 Specify 145-lb. Cylinders of Ucon® Refrigerants**



Ucon Refrigerants are manufactured by  
**UNION CARBIDE CHEMICALS COMPANY** — Division of Union Carbide Corporation  
 270 Park Avenue, New York 17, N. Y.

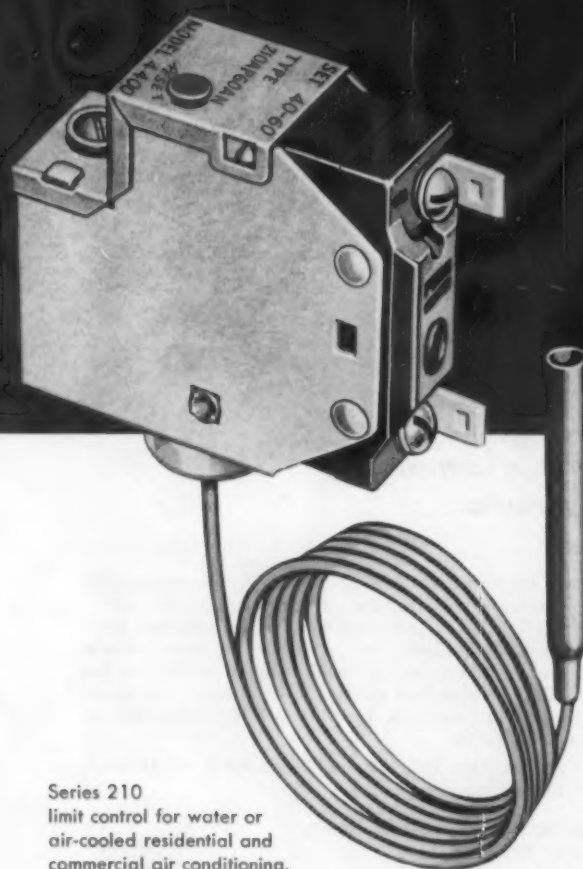
Exclusive Sales Agents to Air Conditioning and Refrigeration Wholesalers  
**ANSUL CHEMICAL COMPANY**, Marinette, Wisconsin

Ucon is a registered trade mark of Union Carbide Corporation

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# NOW! NO MORE WAITING

Service men...  
● here's the  
best news ever!



Series 210  
limit control for water or  
air-cooled residential and  
commercial air conditioning.

your wholesaler  
has limit controls  
for replacement  
on all packaged  
air conditioning

## **Penn universal replacements help you give immediate service**

Now . . . Penn's Series 210 limit control, widely-used by manufacturers of packaged residential and commercial air conditioning, is available for field replacement. And, with its adjustable pressure range, it will fit the specifications of any air conditioner manufacturer.

No more waiting . . . no more disgruntled customers . . . simply go to your wholesaler and get immediately the correct replacement for the high or low limit control. Your wholesaler has a handy Penn cross-reference chart which makes proper selection fast and easy.

Remember, to give your customers prompt service . . . go to your wholesaler and ask for the Penn Series 210 limit control.

**PENN CONTROLS, INC.** Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES





## TIME SAVERS FOR SERVICE CALLS

Henry "on-the-job" accessories are designed to speed up servicing operations and make possible more profitable calls per day. They are considered standard equipment for refrigeration and air conditioning service.

### "GOLD SEAL" SWIVEL CONTROL and LINE TAP VALVES

To Charge, Test or Purge Sealed Systems. Triple-Sealed, Tamper-Proof Valves. Tube Sizes, 3/16" thru 5/8" OD.



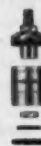
### ADJUSTABLE LINE TAP VALVES

One-piece Needle and Stem. Top Access Three-Screw-Clamp. Two Valves—six tube sizes, 3/16" thru 5/8" OD.



### TERMINAL SEALS for hermetic units

Stop Terminal Leaks Instantly Without Opening the Compressor. No Special Tools Required.



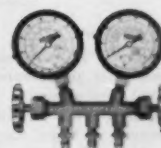
### FLEXIBLE REFRIGERANT HOSES

Featuring Retained Seal Gasket in 1/4" SAE Quick Coupler. Maximum Working Pressure 500 PSI.



### CHARGING & TESTING MANIFOLD

Teflon Valve Seat and Packing. Minimum Torque Required. No Wrench.



Write for Henry Accessory Catalog No. 104AC

# HENRY VALVE COMPANY

Flow Control Devices and Accessories for Refrigeration,  
Air Conditioning and Industrial Applications

MELROSE PARK, ILLINOIS, U.S.A.

CABLE: HEVALCO, MELROSE PARK, ILL.

circle 37 on reader service card

# Product DATA

## Packaged liquid chillers

**Product:** "Versare" line of hermetic packaged liquid chillers.

**Manufacturer:** Industrial Div., American-Standard, Detroit, Mich.

**Features:** Line includes 11 models with net rated capacities up to 67.1 tons available without condenser and with ac-



cessories for use on remote condenser applications. Units can pass through 36" passageway and have automatic safety switches for motor overload, high motor temperature, low oil pressure, high condenser pressure, or low cooler pressure. Pilot lights indicate normal unit operation and identify shut-down causes. Cooler evacuation circuit and crankcase heaters are for compressor protection.

circle 136 on reader service card

## Registers and grilles

**Product:** Extruded aluminum registers and grilles.

**Manufacturer:** Hart & Cooley Mfg. Co., Holland, Mich.

**Features:** Provides every directional air flow and volume control. Faces are etched to soft satin finish and coated with protective acrylic coating. Units not subject to rusting, pitting, corrosion, even when sprayed by salt air.

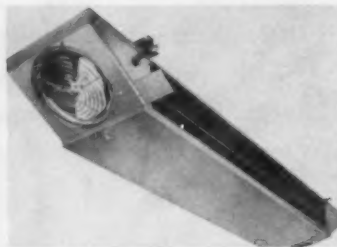
circle 137 on reader service card

## Unit cooler

**Product:** "Lo-Aire" series of unit coolers with air refrigeration coils of very low coil face velocity.

**Manufacturer:** Danville Div., Bohn Aluminum & Brass Corp., Danville, Ill.

**Features:** Produce a positive, low air movement. Are seven models for temperatures above 34 F with capacities from 4000 to 26,600 Btuh at 10 t.d. Also available is automatic electric defrost system for keeping temperatures within 28 to 34 F. Plate-type aluminum fins spaced 5 to 10 inch, extruded fin collars which cover tubing in coil's finned sections, heavy gage aluminum casing and



fan blades, and life-lubricated motors with thermal overload protection also featured in these units.

circle 138 on reader service card

## Ice storage bin

**Product:** 1961 line of upright ice storage bins.

**Manufacturer:** Roy Follett Corp., Phillipsburg, N.J.

**Features:** Storage capacity from 500 to 4500 lb. Inner linings stainless steel; exterior is baked enamel over bonderized or stainless steel. Insulation 3" thick between liner and shell retards ice melting. Top door is sealed lucite for visual inspection of supply.

circle 139 on reader service card

## Electric air conditioner

**Product:** Two-ton electric air conditioner (Model 24-563).

**Manufacturer:** Bryant Mfg. Co., Indianapolis, Ind.

**Features:** Has 24,000 Btuh rating, utilizes existing ductwork of most warm air furnaces, and if outside, can be within 4" of wall, with front edge 22" from



building. Air from condenser discharged through louver and fresh air from outside brought in through similar system. Has "Weather Probe" attachment that automatically shifts blower into low speed for quiet night operation.

circle 140 on reader service card

## Expansion valve

**Product:** Compact capacity expansion valve (Model 900).

**Manufacturer:** Controls Div., American-Standard, Detroit, Mich.

**Features:** In both internally and externally equalized and pressure-limiting types, and available with "C" or "Z" power elements. Tons capacity of 0.5 to 3 with R-12 and 0.8 to 5 with R-22. Small removable power element is shielded arc welded, achieving full diaphragm flexibility. Valve body is high density brass forging and three moving parts and inlet location permit full, free flow of refrigerant through valve. Also offered are large removable inlet strainer held by retainer clip, and ball needle concentric to push rod, both self-aligning and self-centering.

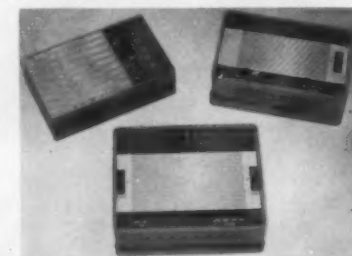
circle 141 on reader service card

## 3-model thermostat

**Product:** "Subtle Touch" thermostat in three models (T-99, T-91, T-344).

**Manufacturer:** General Controls Co., Glendale, Calif.

**Features:** T-99 for heat control only; T-91 single dial summer-winter thermostat that controls both heating and cooling systems; T-344 is master control center featuring automatic switchover heat-



ing-cooling controls. Harmonizes with any decor by housing mercury switch mechanisms in sculptured coverings. Basic hues of buff or gray for coverings with touches of gold make control suitable for any interior.

circle 142 on reader service card

## Capacitor tester

**Product:** "Cappy" pocket-size capacitor tester.

**Manufacturer:** Watsco, Inc., Hialeah, Fla.

**Features:** Tests all types of capacitors and condensers, both ac and dc, all voltages. Operates on 115 v. ac or dc and may be used for testing capacitors which are leaking, grounded, or shorted. Also for testing line voltages, continuity, fuses, and motor windings.

circle 143 on reader service card

Continued on page 30

End Sight,  
Sound  
and  
Water Problems  
with  
**LARKIN**  
**ZEPHYRCON**  
Vertical ↑ Discharge  
Air-Cooled  
Condensers



Capacities from 5 to 60 tons—low silhouette models

**OUTSTANDING FEATURES**

- Patented LARKIN cross-fin coil—aluminum fins bonded to staggered copper tubes.
- Circuiting designed for counter-flow operation.
- Low-speed fans, dynamically balanced, assure top efficiency, quiet operation.
- Each fan has two matched v-belts.
- Fan shaft mounted in ball bearing pillow blocks—permanently lubricated and sealed.
- Heavy-duty motors, drip-proof, NEMA frame, ball bearing, mounted securely on adjustable base within unit housing, protected from weather.
- Removable service door—easy access to motor and belts.
- Metal prepared through five-stage Oakite Crysoat phosphating process.
- Primed with epoxy resin; finished with thermosetting, plastic-base enamel—a triazine resin. Long-lasting, water-and-alkali-resistant.
- Safety-spiral wire guard heavily zinc-plated and Iridite-dipped for maximum corrosion resistance.
- Multiple circuiting available when specified.

Vertical air discharge LARKIN Zephyrcons, BFC-V Models, can be located anywhere regardless of prevailing winds. Noise is kept to a minimum because air discharge is skyward. Low silhouette does not detract from the general appearance of a building.

Heavy eye-bolts on all units facilitate lifting.

These units are built to take severe punishment from the elements in all climate conditions. Basic design LARKIN Zephyrcon air-cooled condensers have proved successful in thousands of installations throughout the world.



Write for Bulletin BFC 61,  
or see your wholesaler



## Product DATA

Continued from page 28

### Portable core drill

**Product:** "Ambassador" portable core drill with high torque 2-speed reversible electric motor.

**Manufacturer:** Acker Drill Co., Inc., Scranton, Pa.

**Features:** Uses thin-wall diamond bits. Other models have gasoline engines or air motors. Features 360-degree operation, rack and pinion feed, alloy gear unit, rugged base.

circle 144 on reader service card

### Input monitor

**Product:** "AIM" input monitor where input represented by dc voltage low as 10 millivolts full scale.

**Manufacturer:** Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.

**Features:** Monitors up to 200 high or low temperatures, pressures, flows, levels, or contact closures at five points per second. Control panel indicates by horn and light conditions and indicates point's name and number. Limits set by inserting pins in pinboard. Detection of signal by comparing voltage from alarm set point pinboard to voltage from dc amplifier



and if latter higher or lower than former, alarm pulse produced. Manual read-out of point within 1% full scale of selected increment.

circle 145 on reader service card

### Air blender

**Product:** Twin-duct air blender for high velocity double-duct airconditioning systems.

**Manufacturer:** Worthington Corp., Harrison, N.J.

**Features:** Operates without motors, piston separators, mechanical linkage. Saves space through use of small, round, high velocity ducts which cut space needs up to 75% over rectangular ducts.

No water or steam lines, electrical connections, fans, or filters except at central unit. For ceiling and under-window installation, single fan system heats, cools, cleans, humidifies, and dehumidifies the air. All heating-cooling equipment centralized in one place and can be used for both interior and exterior zones.

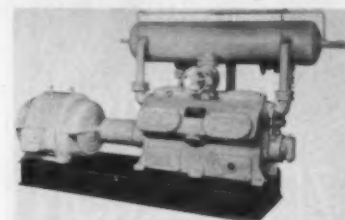
circle 146 on reader service card

### 2-stage compressor

**Product:** Two-stage, 12-cyl. "VMC" compressor.

**Manufacturer:** Vilter Mfg. Co., Milwaukee, Wis.

**Features:** With 6-cyl. model, range of 6 to 40 tons of refrigeration possible.



Offered for direct-connected or V-belt drive, compressor suited for use where processing function requires low temperature refrigeration or where floor limitations prevent selection of individual booster and high-stage compressors. Partitions provide separate booster and high-

Continued on page 34

## LITTLE GIANT CONDENSATE UNITS



### SPECIFICALLY DESIGNED FOR YOUR NEEDS

Little Giant condensate units are especially designed to fit any mechanical refrigeration or air conditioning unit for condensation removal. Available with positive displacement double pole switch, depending on model. Sturdy metal tanks resist corrosion. Available for 115V, 60 cycle or 230V single phase.

For complete specifications, contact



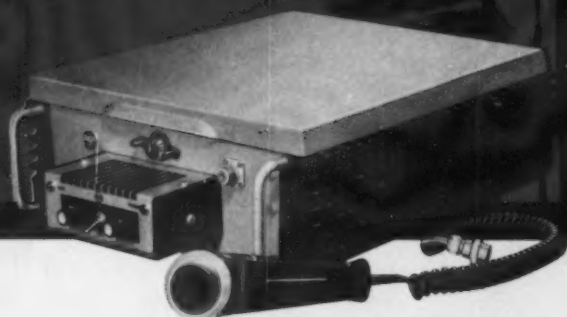
DIVISION OF LITTLE GIANT CORPORATION  
3810 N. Tulsa • Oklahoma City, Okla.

circle 47 on reader service card



# MONEY- MAKERS!

your trucks and  
your RCA  
2-Way Radio!



Your business depends on *calls* and service. That's why a radio-control system is so important. RCA 2-Way Radio can make money for you by assuring quick-as-a-button response to customers, by eliminating driver telephone expense, and by preventing back tracking and deadhead mileage. RCA and dependability have long been synonymous—ever since World War II, in fact, when rugged RCA communications equipment proved it could take it . . . under the toughest of operating conditions.

It took experience and daring to bring you today's new RCA 2-Way Radios. It meant discarding preconceived notions about circuits and redesigning with transistors in key places for reliability

with economy. And it involved engineering a host of other advanced features to assure fine message intelligibility, and long component life, at moderate cost. Every business can now enjoy the money-making advantages of "LD" (Low battery Drain) equipment—today's greatest value in 2-way radio—with RCA service technicians available to keep equipment operating at its peak. Send coupon for information about RCA 2-Way Radio in your business.



The Most Trusted Name in Radio  
RADIO CORPORATION OF AMERICA

**RADIO CORPORATION OF AMERICA**  
Telecommunication Center, Dept. T-261  
Meadow Lands, Pa.

- ☐ Please send me FREE literature on the new RCA Transistorized Mobile Radio.  
☐ Have RCA Communications Specialist contact me and explain why this is today's best value in 2-way radio.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
TYPE OF BUSINESS \_\_\_\_\_  
ADDRESS \_\_\_\_\_ PHONE \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



circle 65 on reader service card



# This man knows **STYROFOAM<sup>®</sup>** and low-temperature installation, too

He's AN APPROVED INSULATION CONTRACTOR, typical of the special group of low-temperature insulation contractors that Dow has selected for their outstanding experience and abilities in installing Styrofoam. Each Approved Insulation Contractor listed below has a reputation for top-quality workmanship. All 103 of these firms are thoroughly familiar with Dow recommendations for installing Styrofoam, and they are committed to follow these recommendations on every job.

Consult an Approved Insulation Contractor when you're planning your next freezer or cooler room. The superior *insulating* performance of Styrofoam, teamed with the superior *installing* performance of an Approved Insulation Contractor, is your assurance of a top-quality job.

*Styrofoam is a registered trademark of The Dow Chemical Company. It is applied only to the homogeneous expanded polystyrene made according to an exclusive Dow process. Styrofoam brand insulation board is available only from Dow and its authorized representatives.*

## SAVE THIS LIST FOR REFERENCE

For the best low-temperature installation, get in touch with the Approved Insulation Contractor near you.

<b>ALABAMA</b> <b>Birmingham</b> Badham Insulation Company, Inc. Bonitz Insulation Company of Alabama <b>Phoenix</b> Barrett & Humes <b>Tucson</b> Arizona Insulation Company, Inc.	<b>INDIANA</b> <b>Indianapolis</b> Indiana Asbestos Co., Inc. <b>South Bend</b> Midland Engineering Company, Inc. <b>Evanston</b> General Insulation Co.	<b>MISSOURI</b> <b>Joplin</b> Joplin Cement Company <b>St. Louis</b> Mid-Continent Ind. Insulation, Inc. <b>Springfield</b> Southwestern Insulation & Material Co.	<b>Hummelstown</b> David R. Trout Associates, Inc. <b>Kingsport</b> Culp Industrial Insulation Company <b>McKees Rocks</b> George V. Hamilton, Inc. <b>Telford</b> Walter R. Dorn Estate
<b>ARIZONA</b> <b>Little Rock</b> J. C. Lewis Company <b>CALIFORNIA</b> <b>Fresno</b> Fiberglas Engineering & Supply Div. <b>Los Angeles</b> Armstrong Contracting & Supply Corp. Fiberglas Engineering & Supply Div. Los Angeles Cork Company Industrial Building Materials, Inc. <b>North Sacramento</b> Fiberglas Engineering & Supply Div. <b>San Francisco</b> Fiberglas Engineering & Supply Div. Peterson-Cobby Insulation, Inc. <b>San Diego</b> Fiberglas Engineering & Supply Div.	<b>IOWA</b> <b>Des Moines</b> Low-Temp Insulations, Inc. <b>KANSAS</b> <b>Kansas City</b> Mid-Continent Ind. Insulation, Inc. Preston Refrigeration Company <b>KENTUCKY</b> <b>Louisville</b> Cardinal Industrial Insulation, Inc. <b>LOUISIANA</b> <b>Baton Rouge</b> McCarty-Branton, Inc. <b>New Orleans</b> McCarty-Branton, Inc. <b>Shreveport</b> Taylor Contracting & Supply Co., Inc.	<b>NEBRASKA</b> <b>Omaha</b> Low-Temp Insulations <b>NEW JERSEY</b> <b>East Orange</b> Woolstate Corporation <b>NEW MEXICO</b> <b>Albuquerque</b> Fiberglas Engineering & Supply Div. Mountain States Insulation Co., Inc. <b>NEW YORK</b> <b>Albany</b> Cork Insulation Contracting Company <b>Buffalo</b> The Jewett Refrigerator Company, Inc. <b>Forest Hills</b> Charles M. Trojahn <b>New York City</b> Eastern Cold Storage Insulation Co., Inc. Globe Cork Insulation Company Martin & William Smith, Inc.	<b>RHODE ISLAND</b> <b>Providence</b> Rhode Island Covering Company <b>SOUTH CAROLINA</b> <b>Columbia</b> Bonitz Insulation Co. of S. C. <b>TENNESSEE</b> <b>Memphis</b> Chris Fiedler Company, Inc. <b>Nashville</b> Young Sales Corporation <b>TEXAS</b> <b>Amarillo</b> Young Sales Corporation <b>Dallas</b> Southwest Cold Storage Vault Company <b>Houston</b> Gulf Insulating Corporation <b>San Antonio</b> General Supply Company
<b>CONNECTICUT</b> <b>Bloomfield</b> W. L. Walker Co. <b>COLORADO</b> <b>Golden</b> Denver Lining Co. <b>FLORIDA</b> <b>Haines City</b> R-S Industrial Insulation <b>Jacksonville</b> Insulation Contractors, Inc. <b>Miami</b> L. L. Jackson, Inc. <b>Tampa</b> Gulf Coast Insulation Company, Inc. Insulation Contractors, Inc.	<b>MAINE</b> <b>Lewiston</b> Northeastern, Inc. <b>MARYLAND</b> <b>Baltimore</b> F. V. Vieck Company The Wallace & Gale Company <b>Cheverly</b> Frank Heintze Company <b>MASSACHUSETTS</b> <b>Waltham</b> Atlas Insulation Company, Inc. <b>Walspole</b> Allied Cork, Inc. <b>West Springfield</b> A. L. Remington Co.	<b>SYRACUSE</b> The Knudsen Company, Inc. <b>Utica</b> George Weisenberger Company, Inc. <b>NORTH CAROLINA</b> <b>Ashville</b> Bonitz Insulation Company of Carolina-Tennessee, Inc. <b>Goldensboro</b> Bonitz Insulation Company of Eastern Carolina, Inc. <b>Greensboro</b> Bonitz Insulation Company, Inc. <b>OHIO</b> <b>Cincinnati</b> Breeding Insulation Company <b>Cleveland</b> Ross Insulation, Inc. <b>Dayton</b> C. W. Booher & Company <b>Toledo</b> Service Products, Inc. <b>Columbus</b> Service Products, Inc.	<b>VIRGINIA</b> <b>Norfolk</b> C. C. Foreman & Sons, Inc. <b>Richmond</b> Ralph Lampie <b>Roanoke</b> Whitescarver Engineering Company <b>WASHINGTON</b> <b>Seattle</b> Associated Asbestos, Inc. Fiberglas Engineering & Supply Div. <b>Spokane</b> Associated Asbestos, Inc. Fiberglas Engineering & Supply Div. <b>Yakima</b> Reese & Sons
<b>GEORGIA</b> <b>Atlanta</b> Asbestos Insulation Co. North Brothers, Inc. <b>IDAHO</b> <b>Boise</b> Fiberglas Engineering & Supply Div. <b>ILLINOIS</b> <b>Chicago</b> Cork Insulating Company <b>East Moline</b> Low-Temp Insulations, Inc. <b>Peoria</b> Sprinkmann Sons Corp. of Ill., Inc.	<b>MICHIGAN</b> <b>Bay City</b> Industrial Insulation, Inc. <b>Detroit</b> Chrysler & Koppin Company <b>Grand Rapids</b> Tony Batenburg Insulation Company <b>MINNESOTA</b> <b>Minneapolis</b> General Adhesives Products Co. Hauenstein & Burmeister, Inc. Insulation Sales Company <b>MISSISSIPPI</b> <b>Jackson</b> Munford Engineering Company	<b>OREGON</b> <b>Portland</b> E. J. Bartlett Company, Inc. Fiberglas Engineering & Supply Div. <b>PENNSYLVANIA</b> <b>Catawago</b> Tri-City York Co., Inc.	<b>WEST VIRGINIA</b> <b>Charleston</b> Asbestos & Insulating Company <b>WISCONSIN</b> <b>Green Bay</b> Northwestern Asbestos & Cork Insulation Co. <b>Madison</b> Industrial Material Company <b>Marquette</b> Northwestern Asbestos & Cork Insulation Co. <b>Milwaukee</b> Sprinkmann Sons Construction Co. <b>Merrill</b> Taylor Insulation Company, Inc.

THE DOW CHEMICAL COMPANY

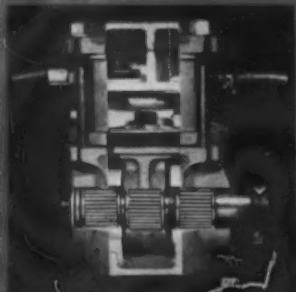
**DOW**

Midland, Michigan

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# NEW! ACID RESISTANT PUMP

FOR DESCALING CONDENSERS  
FOR CIRCULATING R-11 WHEN  
CLEANING HERMETIC BURNOUTS



## ACE MODEL 77 NRS DIAPHRAGM PUMP

Delivers top cleaning efficiency through reciprocating pump surge action! All parts in contact with liquid completely acid resistant! More good news! The Model 77 NRS has no seals to leak and is so designed that it can run dry for hours without damage.

PLUS A COMPLETE LINE OF  
ACE

1750 and 3450 RPM  
CENTRIFUGAL PUMPS

For general service circulation of hot or cold water, pressure boosting or a wide range of other uses, the versatile ACE

assures you of peak pumping performance, trouble-free operation and easy maintenance. Here are a few of the many

ACE features: John Crane seal; oversized, pre-lubricated, sealed ball bearings; minimum impeller overhang, baked on paint inside and out; NEMA standard, continuous duty motors; and 100% factory testing. Team up with ACE for pumps that are built better to perform better. All these versatility features and truly competitive price!

1980 Channahon Ave.

Memphis, Tenn.



circle 1 on reader service card

## Product DATA

Continued from page 30

stage sections. A 16" dia. intercooler between stages gives sub-cooling and desuperheating.

circle 147 on reader service card

### Piping thermometer

**Product:** Dial thermometer for piping or ductwork.

**Manufacturer:** Marsh Instrument Co. Div., Colorado Oil and Gas Corp., Skokie, Ill.

**Features:** In four types, seven ranges, 72 combinations, and two sizes of dials, 3½ and 4½". For piping, range from 0 to 300 F, for chilled, condenser, or hot water; for ductwork, range from -40 to 220 F, for kilns, ovens, ducts. Also available with 6' capillary tubing for remote reading, as well as direct mounting, and three standard separable sockets and two extension necks and stem lengths.

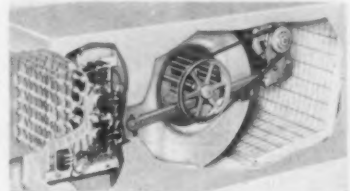
circle 148 on reader service card

### Electric heating line

**Product:** Electric heating line that includes forced air electric furnace, duct heater, in-room outlet.

**Manufacturer:** Lennox Industries, Inc., Marshalltown, Iowa.

**Features:** Model "ES Series" furnace has output of 39,000 Btuh, resiliently-mounted blower and can be horizontal upflow or downflow. Measures 42½ x 19 x 17". Heat outputs at voltages: 208 v., 31,800 Btuh; 220 v., 35,700 Btuh; 230 v.,



39,000 Btuh; 240 v., 42,500 Btuh. Model "EDT1" duct heater handles 5.7 kw for 19,500 Btuh output. Has own transformer and can be installed in parallel or in series in one duct. Model "E02" outlet for 6" pipe run and plug-in resistance unit in 500, 1000, and 1500 watts for 1700, 3400, and 5100 Btuh.

circle 149 on reader service card

### Air-cooled condenser

**Product:** "V-Con" remote air-cooled condenser.

**Manufacturer:** Halstead & Mitchell Co., Pittsburgh, Pa.

**Features:** Offer corrosion-resistant cabinet, totally-enclosed motors, direct

Continued on page 80




## Had Enough?

Switch to a

# READING

Job-Planned  
UTILITY BODY



Don't pile it... file it!

If you're spending as much time looking for tools and equipment as you spend on the job, it's time to make the smart switch—to READING! "Magic Stowaway" compartments keep everything neatly filed, at your fingertips when and where you need it. You save time and money on every

call! Reading Bodies are built by master mechanics for master mechanics... mass-produced to cost you less. ★Get the Proof! See your truck dealer today for a free demonstration and all the facts. Or write direct for catalog and name of local distributor.

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circle 67 on reader service card



## HOW TO INSULATE PIPES EASILY AND QUICKLY

### Big advantages of preformed insulation

For new pipe lines and those already installed, preformed insulation offers valuable advantages. The most important are ease of installation and saving in labor. It can be applied in as little as half the time required for other types of pipe insulation. And it offers the added benefit of a smooth, finished appearance when applied.

### Characteristics of VascoCel Insulation

Made of soft, highly resilient Neoprene, preformed VascoCel offers the surest, easiest way to stop condensation and sweating of air-conditioning and refrigeration equipment lines. Its light weight and flexibility make it unusually easy to handle and to apply.

**Moisture-Proof**—Its closed cellular structure provides an excellent barrier against moisture.

**Insulates**—It provides thermal insulation at temperatures from 0 to 220°F.

**Nonabsorbent**—An immersion test revealed absorption of only 7% by weight in 15 days! And its resistance to air penetration is 100% effective.

**Durable**—The resistance of VascoCel to penetration by air and water means unusually long service life—cuts maintenance costs on equipment.

**Resists Oils, Ozone, Acids, Alkalis, Solvents**—All have little effect on VascoCel, other than causing it to swell slightly.

**Safe**—It is self-flame-extinguishing and therefore incapable of conducting a flame, as from room to room.

VASCOCCEL	
SPECIFICATIONS	
Wall Thicknesses	3/8 in., 1/2 in., 3/4 in.
Density	7.68 lb. per cu. ft.
K factor* (120°F)	0.36
Flammability	Self-Flame-extinguishing
Average Water Absorption	7.21% weight gain
Average Air Transmission	0.00014 cu ft/hr/sq ft
Average Water Vapor Transmission	0.0583 perm† at 80°F ambient and 75% relative humidity

\*K Factor: Heat conductivity expressed in Btu in. of material thickness/sq ft °F difference/hr.

†Perm: A measure of vapor conductivity of 1/2 in. wall VascoCel expressed as grains of moisture/sq ft/hr in. of mercury pressure difference.

### Quick easy installation

**For new tubing**—VascoCel slides over new tubing or pipe like a sleeve. Fits snugly, even on bends up to 45°. For sharper angles it can be cut in a miter box and fitted onto the pipe. Sealing with VascoCel Adhesive produces a permanent, air and moisture-tight joint.

**For installed tubing**—Slit VascoCel lengthwise with a sharp knife or razor blade. Slip over and around the tubing and seal with adhesive.

**NOTE:** When applying the adhesive always wait until the adhesive is nontacky to the touch before making the seal.

## HOW TO MAKE FITTINGS

### Tools you need

- A miter box
- Suitable cutting blade (saw-edged bread-knife)
- Single-edge razor blade for slitting insulation
- Special adhesive (VascoCel Adhesive is recommended)
- Adhesive applicator (brush or slim piece of springy metal)

When cutting the insulation in the miter box, move the blade back and forth, letting the teeth do the work. Do not press heavily. This deforms the tubing and can cause an inaccurate cut.

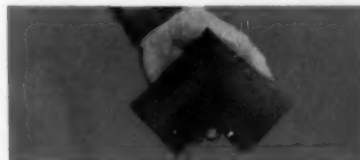
### The Tee

Cut 3 pieces of tubing. One takes a single 45° miter box cut. The other two require a double 45° cut each. Apply special cement to cross sections where they have been cut and fit together as shown in Fig. 1. Spread adhesive in a thin, even coating, covering all edges thoroughly. Allow to dry (nontacky to touch) before joining sections.



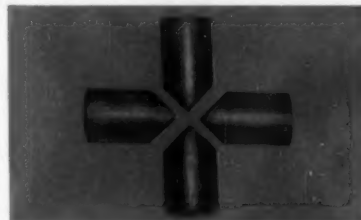
### The Elbow

To make an elbow, use two sections, each with a single 45° cut. Apply adhesive and press firmly together, as in Fig. 2.



### The Cross

Prepare four sections, each double-cut and join with adhesive as shown in Fig. 3.



FOR TROUBLE-FREE  
MAINTENANCE USE

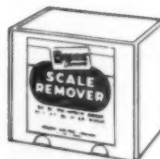
# "VIRGINIA" REFRIGERATION PRODUCTS



**"Virginia" Scale & Corrosion Inhibitor**  
Reduces scale buildup sharply, keeping scale-forming solids in suspension or solution. Less scale, less labor, lower maintenance costs.



**"Virginia" Liquid Scale Remover**  
Ideal for heavy scale. Dissolves 3 lb. of scale per gal. Works fast. Inhibited to prevent metal damage. (Anti-foam agent and test papers included with every container.) Light shatterproof throwaway container for easy handling and easy pouring.



**"Virginia" Solid Scale Remover**  
Highly inhibited—safe for use on galvanized, dipped zinc and aluminum water-cooled equipment. Destroys algal growth. Contains 96% sulfamic acid.



**"Virginia" Algae-Cides**  
Adaptable to the special use requirements in (1) towers, (2) evaps, (3) air washers, and (4) ice machines and drip pans. A new No. 4 high-potency formula kills the tough resistant types of algae.

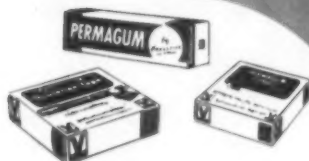


**Du Pont FREON® Refrigerants**  
Nonflammable, nontoxic, stable, odorless. Best known for premium quality. Most widely used refrigerants in the industry. "Virginia" is the only national sales agent for Du Pont "Freon". F-11,\* F-12,\* F-13,\* F-22,\* F-113\* and F-114\* are available in cylinders of all popular sizes.

\*Du Pont registered trade mark



**"Virginia" Ice Machine Cleaner**  
Eliminates slow freezing, bad taste and odor. Will not injure enamel or polished metal surfaces. Highly effective on automatic cube or flake ice machines.



**Permagum Insulation**  
Tape—ideal for stopping pipe drip. Adheres to any dry surface. *Permagum slugs*—seals seams, copper tube, BX and conduit entries against moisture. *Cords*—nonstaining, odorless, shaped for use on display cases, freezers, room coolers, etc.



**VascoCel Insulation**  
Preformed of soft, durable, clean, odorless Neoprene. Cuts time and labor costs sharply. Closed-cell structure makes condensation impossible. Ozone, oil, acid, and fungus resistant. Application temperature range 0-220°F. Available in 3/8", 1/2" and 3/4" wall thickness.



**"Virginia" Degreasing Solvent**  
No. 10 has low toxicity, is noncorrosive and fast drying. High flashpoint of 154-160°F reduces fire hazard; dielectric strength 20,000 volts.  
Ask about "Virginia" "Freon 11" Cleaning Solvent for motor burnouts.



**"Suniso" Refrigeration Oils**  
G Oils are improved for greater stability and lower waxing point. Available in 3G-150 SSU, 4G-300 SSU, and 5G-500 SSU. Dual Inhibited oils have same low wax point, resist breakdown and copper-plating even more effectively.



**Can-O-Gas® Packaged Refrigerants**  
Throwaway cans—full line in screw-top or clip-top cans. Wide variety of preweighed charges, accurate to ±4 grams. Selection of Freon® gases, sulfur dioxide, and methyl chloride.

Carried by wholesalers everywhere. Order from one nearest you or contact Refrigeration Division, VIRGINIA SMELTING COMPANY, West Norfolk, Va.  
Available in Canada and many other countries

"Virginia" is the only national sales agent and authorized repacker for Du Pont's "Freon" Refrigerants.

# Kodiak ICE MAKERS

## "THE NEW SENSATIONAL LINE OF CUBERS AND CHIPPERS"

Kodiak introduces basic fiberglass construction eliminating erosion and rust deterioration. Use of fiberglass allows for beauty in design and permanent non-fading color. Where color is important in decorating, then it's Kodiak color.

The Kodiak Cuber (CU 200 and CU 400) produces clear, solid ice cubes of an ideal size and square as a cube should be.



The Kodiak Chipper (CH 250 and CH 550) produces bright distinctive chips suitable for the discriminating user.

Kodiak ice makers have been designed for simplicity of operation and with the minimum of moving parts and controls. All mechanical parts are readily accessible and have been designed for ease of maintenance.

All models are equipped with giant storage bins holding a full day's production of ice. This assures maximum efficiency of the machine and guarantees ice being available to the user at all times regardless of peak usage periods.

**"Get on the track with Kodiak, it's a Bear for Wear"**



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Type of Business \_\_\_\_\_

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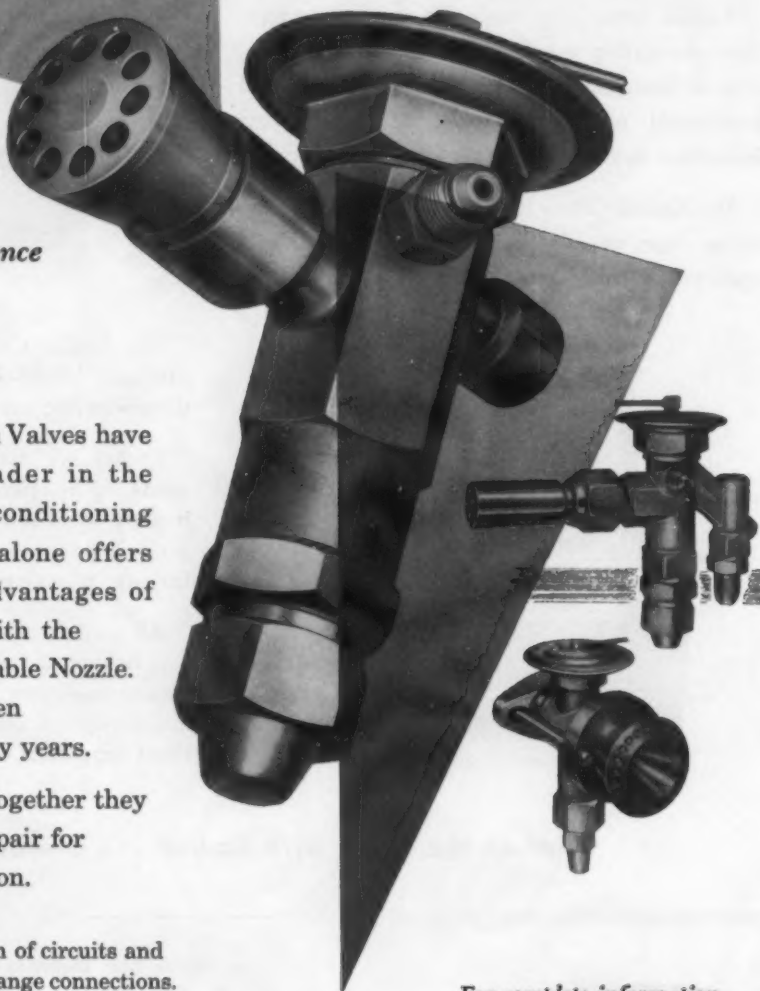
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APRIL 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS



# LET'S TALK *Business*

## Brand loyalty pays big dividends

**I**t's just common sense for a contractor-dealer to identify himself with a specific brand of refrigeration and/or airconditioning equipment.

Why?

The advantages are many. And they are not restricted to just the contractor-dealer. Both the wholesaler and the manufacturer benefit, too.

What are some of these advantages?

- Training programs become more effective.
- Installation practices are upgraded, resulting in more satisfied customers.
- Labor costs are cut because men work better and faster and make fewer errors when they're familiar with the products with which they work.
- Sales programs become more effective. This results in greater industry growth, since brand loyalty serves as an impetus for more enthusiastic selling.

THE REFRIGERATION & AIRCONDITIONING BUSINESS is just completing a nationwide survey on product preference at the contractor-dealer level. So far nearly 50% of those replying say they handle various makes of the many product classifications we listed. And that goes for both refrigeration and airconditioning products, as well as components.

We know that many manufacturers have never established a product image at the trade and wholesale level. They seem to want too many outlets.

We're primarily interested in helping the contractor-dealer improve his profits. We have encouraged him to look at his present lines and consider any changes that will help him improve this profit. (See "Time to Check Your Lines" in our January 1961 issue.) We tell contractor-dealers that once they've changed or added a line they should market it with everything they've got.

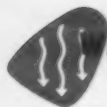
You should know your market well enough to be able to talk potential as well as how you've accomplished this potential. If you demonstrate a strong brand loyalty and an intimate knowledge of your market, no manufacturer is going to set up additional outlets in your area. Especially if you have proved your ability to sell your share.

Contractor-dealers in our industry have pressured manufacturers for lower prices on products. Because of this, many products are introduced with inherent mechanical troubles. This is disastrous for the entire industry. And sometimes the contractor-dealer never recovers from the financial drain.

When you ask for lower prices, be sure to compare similar products. Then buy through your regular source of supply.

Your best opportunity for profit is with products in which you have demonstrated brand loyalty.

*Jack Robinson*



Scared of  
pressure



drop  
problems?

## USE THE "WORRY TABLE"

CHARLES N. RINK, *assistant vice president, Industrial Acoustics Co., Inc.*

WORRY ABOUT PRESSURE DROP is an occupational disease that afflicts many contractors and engineers called upon to figure air handling systems.

They get concerned about starving the system of air. They have an uneasy conviction that if the sum of the static pressure drops of the system components should increase the total static pressure drop of the system to some vaguely defined critical point the fan will fail to deliver enough air.

Most of this concern is needless and unfounded. Certainly the fan is the heart of any air handling system. But, like the human heart, it can keep doing its job at or near its rated capacity even under severely adverse conditions.

If you don't believe it, consult the WORRY TABLE on the facing page. It shows you how unimportant static pressure drop considerations really are when you properly relate them to the total static pressure drop for which you have selected the fan.

Here are two specific examples of how the Worry Table can help you:

**CASE NO. 1**—The contractor selected and ordered a forward curved blade fan to deliver 13,000 cfm at an estimated 1.25" SP (static pressure), since the original system was calculated to have a 1.25" static pressure drop.

After the fan had been shipped, he discovered that the ductwork had to be made much smaller to fit into the available space. When he recalculated the job on this basis he found that the system static pressure drop would be 1.50" — 20% more than that for which the fan was selected.

His first inclination was to panic. But then he remembered to consult the Worry Table. He quickly saw that the fan ordered — with no change in size, speed, drive, or horsepower — would automatically rebalance itself when installed in the system. At the new balance point it would handle only 7% less air.

Knowing that the AMCA (Air Moving and Conditioning Association) code allows fan manufacturers a plus or minus 2% variance from their published ratings, and that the system design included a safety factor of at least 10%, he realized that the job would work quite satisfactorily, even with the smaller ducts.

**CASE NO. 2**—A consulting engineer designed a system handling 22,000 cfm. He calculated the system static pressure drop at 4" and specified a backward

Percent Higher/Lower SP	CHANGE IN CFM in air handling systems with these types of fans		
	FORWARD	BACKWARD	AXIAL
+ 100	- 30%	- 24%	- 27%
+ 50	- 17	- 12	- 13
+ 25	- 9	- 8	- 7
+ 20	- 7	- 6	- 5
+ 15	- 6	- 5	- 4
+ 10	- 4	- 3	- 2
+ 5	- 2	- 2	- 1
Use Values ABOVE or BELOW	HIGHER when the ACTUAL SP is or than original design LOWER		
- 5	+ 2	+ 2	+ 2
- 10	+ 5	+ 3	+ 3
- 15	+ 7	+ 5	+ 4
- 20	+ 9	+ 7	+ 6
- 25	+ 12	+ 9	+ 7
- 50	+ 28	+ 20	+ 12

## THE WORRY TABLE

Use it regularly. It's a great ulcer-saver, because it will prove to you that in most cases there's no need to worry at all about pressure drop in air handling systems.

curved blade fan. The fan was installed and the system worked well.

After a period of years the space occupancy changed from a general office area to a private office area. The engineer was asked to redesign the system to include cooling and silencing equipment required by this change.

He found the cooling would add 0.5" extra static pressure drop, and the silencers another 0.3". This meant that the revamped system would have a total of 4.8" static pressure drop when handling 22,000 cfm. He knew that the fan had been selected for only 4".

What would happen? Was he going to have to specify a new fan, or change the drive and order a new motor?

He consulted the Worry Table and found that for a 20% increase in SP he would lose only 6% of the cfm, which meant that the system would still handle 20,680 cfm. With an increase in temperature difference of less than 1 degree, and considering the leeway provided by the AMCA code and the safety factor, he saw that he had no problem.

These two actual examples point up how easy it is to predict what will happen to air volume (cfm) in an air handling system when any item having a static pressure loss is added to the system or taken out. And the result is not nearly as critical as most contractors and engineers believe.

This doesn't mean that the man laying out the air handling system should be sloppy in his calculations or careless in his selection of equipment. It only means that if he does make a mistake, or if the system is altered in some way, he may still be able to get by with his original specifications — without jeopardizing the successful performance of the job.

Sound too good to be true? Maybe so. But it really is true, thanks to the relatively simple relationships which exist in air handling problems. The material that follows will prove this fact to you in a way you can readily understand, regardless of how little or how much engineering knowledge you may have.

The relationship between cfm and SP in air handling systems is graphically presented in the charts reproduced with this article.

Here are the steps to take in designing an air handling system, including all items involved, such as louvered intakes, filters, return air grilles, heating and cooling coils, fans, ductwork, mixing boxes, elbows, branches, diverters, dampers, silencers, and outlet diffusers.

**STEP 1:** Calculate the cfm (including safety factor) needed to solve the problem. Do this by the usual methods, involving heat gain, heat loss, and ventilation requirements. Refer to the chapters in the Heat-

*Continued on page 42*



## AIR HANDLING

ing Ventilating Air Conditioning Guide covering "Heating and Cooling Loads" and "Industrial Exhaust Systems".

**STEP 2:** Design the system to properly heat, cool, exhaust, and distribute this cfm in the area involved. This requires sizing the ductwork and selecting the various items of equipment to suit the application. Refer to chapters in the HVAC Guide covering "Air Systems and Equipment".

**STEP 3:** Calculate the SP of the air handling system designed in Step 2 when handling the cfm calculated in Step 1. Tables in manufacturers' catalogs give the SP of all equipment items at all air velocities. Add up the SP of all pertinent items, including a safety factor, and you will arrive at the total SP for which the fan should be selected.

Once you have determined the SP for the cfm being handled, the relationship between the two (in this

system) is such that the SP varies as the square of the cfm. For example, if the SP is 1½" when the system handles 13,000 cfm, then when the system handles 19,500 cfm the SP will be

$$\left(\frac{19,500}{13,000}\right)^2 \times 1.25" = 2.25 \times 1.25" = 2.82"$$

Chart A shows how the SP varies with the cfm (or velocity) in the system.

**STEP 4:** Pick the fan best suited to the particular application. This is sometimes a difficult choice. Space and cost may be the determining factors. For large fans running continuously (as in power plants), operating efficiency usually is extremely important. Fans in air handling systems operating only a few hours a day, on the other hand, may be considered from the standpoint of initial cost rather than operating cost. In such applications, slightly smaller and less efficient fans may be acceptable. Select the fan from the manufacturer's catalog ratings and note its rpm and hp.

## HERE'S YOUR KEY TO THE WORRY TABLE

This table contains the basic data you need to use the Worry Table. Here's how to use it. Find the original design SP in the center bar of the table. Then read either up or down, depending upon whether the revised SP is higher or lower than the original. When you find the new SP, or its nearest equivalent, read horizontally to the left hand column and you will find the percent of increase or decrease. Now find this same percentage figure in the left hand column of the Worry Table and read horizontally to the right until you come to the column headed by the applicable fan design. The figure in this space is the percentage correction to be applied to the original cfm.

**EXAMPLE:** The original system has a backward curved blade fan operating at 3" SP and handling 50,000 cfm. The new system will have to operate at 3.3". To find how much this change in SP will affect the cfm, read along the center bar (Original Design SP) to 3.0". Next, read up to 3.3". Then read left to +10%. Now refer to the Worry Table and find +10% in the left hand column. Read to the right, and in the fan type column headed "Backward" you will find the figure -3%. This means that the existing fan, just as it is, will handle 48,500 cfm (3% less than the original 50,000 cfm) at the new SP of 3.3".

	1.00	2.00	3.00	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	22.0	24.0	26.0	28.0
+ 100%	.75	1.50	2.25	3.0	3.8	4.5	5.3	6.0	6.8	7.5	8.3	9.0	9.8	10.5	11.3	12.0	12.8	13.5	14.3	15.0	16.5	18.0	19.5	21.0
+ 50%	.63	1.25	1.88	2.5	3.1	3.8	4.4	5.0	5.6	6.3	6.9	7.5	8.1	8.8	9.4	10.0	10.6	11.3	11.9	12.5	13.8	15.0	16.3	17.5
+ 25%	.60	1.20	1.80	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.0	9.6	10.2	10.8	11.4	12.0	13.2	14.4	15.6	16.8
+ 20%	.58	1.15	1.73	2.3	2.9	3.5	4.0	4.6	5.2	5.8	6.3	6.9	7.5	8.1	8.6	9.2	9.8	10.4	10.9	11.5	12.7	13.8	15.0	16.1
+ 15%	.55	1.10	1.65	2.2	2.8	3.3	3.9	4.4	5.0	5.5	6.1	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.5	11.0	12.1	13.2	14.3	15.4
+ 10%	.53	1.05	1.58	2.1	2.6	3.2	3.7	4.2	4.7	5.3	5.8	6.3	6.8	7.4	7.9	8.4	8.9	9.5	10.0	10.5	11.6	12.6	13.7	14.7

Values in table above represent HIGHER ACTUAL static pressures at operating point than originally estimated.

Original Design SP	0.5"	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"	4.5"	5.0"	5.5"	6.0"	6.5"	7.0"	7.5"	8.0"	8.5"	9.0"	9.5"	10"	11"	12"	13"	14"
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Values in table below represent LOWER ACTUAL static pressures at operating point than originally estimated.

- 5%	.48	.95	1.43	1.9	2.4	2.9	3.3	3.8	4.3	4.8	5.2	5.7	6.2	6.7	7.1	7.6	8.1	8.6	9.0	9.5	10.4	11.4	12.4	13.3
- 10%	.46	.90	1.36	1.8	2.3	2.7	3.2	3.6	4.1	4.5	5.0	5.4	5.9	6.3	6.8	7.2	7.6	8.1	8.6	9.0	9.9	10.8	11.7	12.6
- 15%	.43	.88	1.28	1.7	2.1	2.6	3.0	3.4	3.8	4.3	4.7	5.1	5.5	6.0	6.4	6.8	7.2	7.7	8.2	8.5	9.3	10.2	11.0	11.8
- 20%	.40	.80	1.20	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.0	8.8	9.6	10.4	11.2
- 25%	.38	.75	1.13	1.5	1.9	2.3	2.6	3.0	3.4	3.8	4.1	4.5	4.9	5.3	5.6	6.0	6.4	6.8	7.1	7.5	8.2	9.0	9.7	10.5
- 30%	.35	.70	1.05	1.4	1.8	2.2	2.5	2.9	3.3	3.7	4.0	4.4	4.8	5.2	5.5	5.9	6.3	6.7	7.0	7.4	8.0	8.7	9.4	10.1



Once you have picked the fan and determined the rpm for the cfm and SP being handled, the fan performance is fixed. Chart B shows what the fan will do.

**STEP 5:** Plot Charts A and B on one chart to show exactly what happens when the system curve and the fan curve combine. Note that the two curves cross at only one point (13,000 cfm at 1.25 SP).

When air flows in the system, each cfm has only one corresponding SP point, which must be on the system curve. Likewise, the cfm vs. SP required must be a point on the fan curve. So the point where both operate together is the point where the two curves cross. The fan in the system will not operate at any other point. Chart C shows this relationship.

**CHART A** shows a typical system in which the SP of such equipment items as filters, coils, and ductwork adds up to 1.25" when the system is handling 13,000 cfm. If the cfm in this system changes, the SP will always vary as described in Step 3. The system does not care where it operates on the system curve, but it must operate at some point on this curve and it can not operate at any other place. The system curve is constant and permanent. It does not change unless something is added to the system, taken from it, or the system is altered in some way.

**CHART B** shows a typical cfm vs. SP curve of a fan at a particular speed. The fan manufacturer tests his fans, and it is true that a fan at a particular speed has only one specific performance curve. The fan does not care where it operates on this curve, but it must operate at some point on this curve. The only time this fan will deliver cfm at a SP not shown on this curve is when the speed is changed or when the system has something added to it, taken from it, or is altered in some way.

**CHART C** shows what happens when there are extreme changes in SP. If the SP rises from 1.25" to 2.5" (A), the cfm drops 25% from 13,000 to 9,750 (AA). If the SP drops from 1.25" to 0.625" (C), the cfm increases 26% from 13,000 to 16,400.

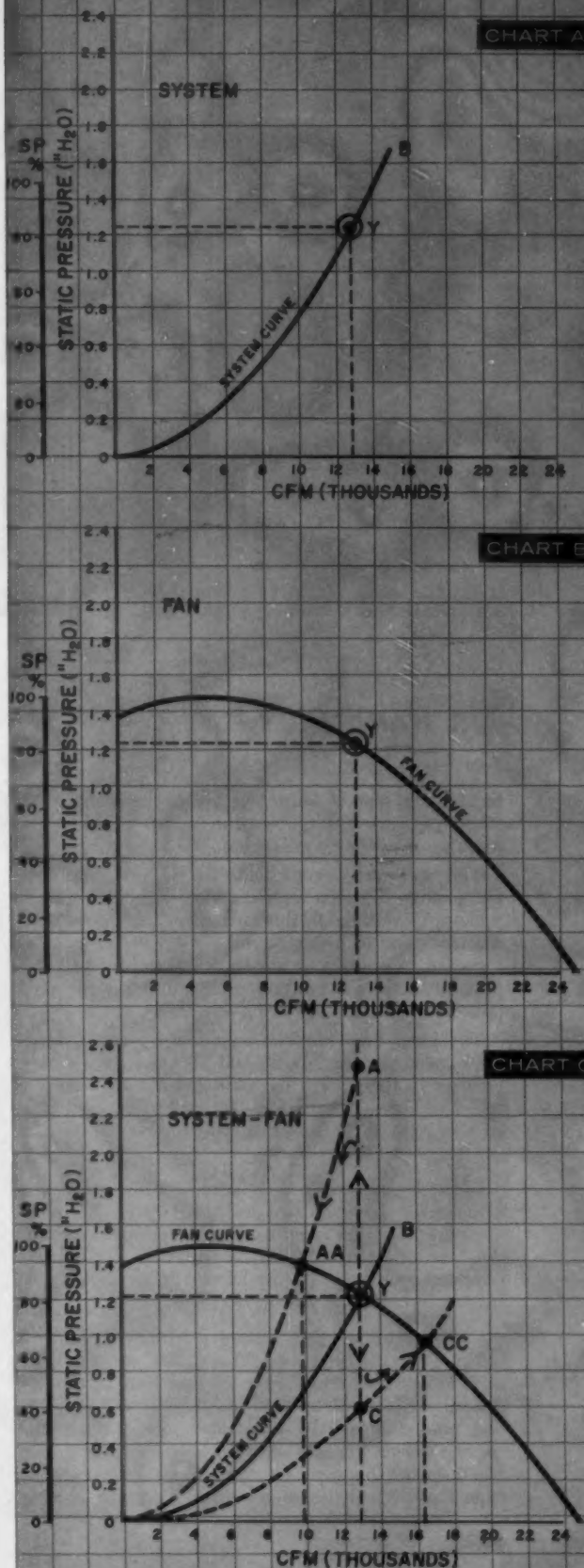
**CHARTS D, E and F** graphically show the performance characteristics of the three types of fans commonly used in air handling systems — forward curved blade, backward curved blade, and axial flow. The shaded portions of these curves establish the limits within which each type of fan normally would be selected for application.

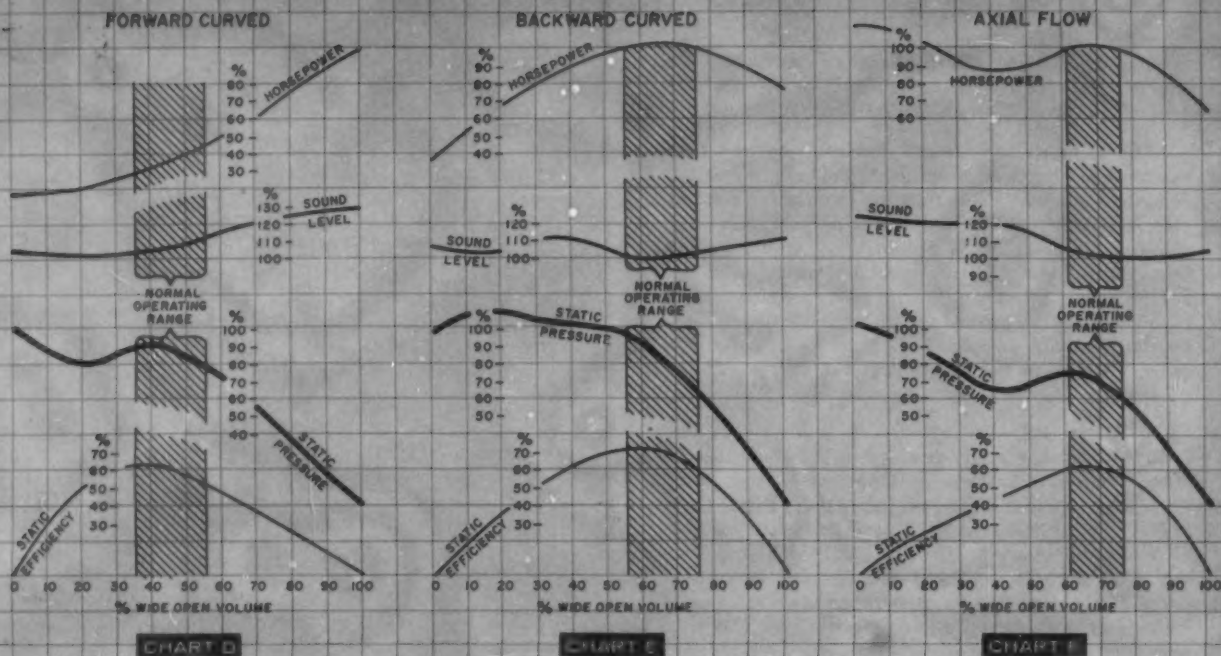
Note the close agreement between the most efficient operating point and the lowest sound level, as shown by the sound level curve. This fact is important in designing quiet systems.

Each type of fan has a significantly different curve. These differences sometimes dictate the selection of one fan rather than another for a specific job.

The forward curved blade fan has a normal operating range between approximately 35 and 55% of its wide open volume. In this area it has its *highest* static efficiency and its *lowest* sound level. Be careful never

*Continued on page 44*





to pick this type of fan to the left of the hump in the static pressure curve, because of the possibility of hunting or excessive pulsations.

The **backward curved** blade fan has a normal operating range between approximately 55 and 75% of its wide open volume. In this area it has its *highest* static efficiency and its *lowest* sound level. You can pick this type fan to operate at almost any point on its static pressure curve without danger of hunting or excessive pulsations.

The **axial flow** fan has a normal operating range between approximately 60 and 75% of its wide open volume. In this area it has its *highest* static efficiency and its *lowest* sound level. To avoid hunting or excessive pulsations, pick this type fan to the right of the hump (if there is one).

**CHART G** plots the three complete fan static pressure curves shown in Charts D, E and F. The black line portions of these curves show the normal operating range of each type of fan. The dotted arrows indicate the point at which you would usually pick each type for use in a normal system.

**CHART H** is a greatly enlarged section of Chart G, showing the cfm between 56 and 65% of wide open volume, and the SP between 80 and 100% of shut off pressure. By means of this magnified view of selection point YB on the backward curved blade fan curve (88% of SP, 62% of cfm) it graphically shows exactly what happens as operating conditions vary from the original design selection. An understanding

of this chart will clearly show the relative unimportance of static pressure changes as they affect cfm.

In addition to the system curves for the original design SP (solid line passing through point YB), this chart also shows system curves for SP variations from plus 15 to minus 10% of the original SP (broken lines).

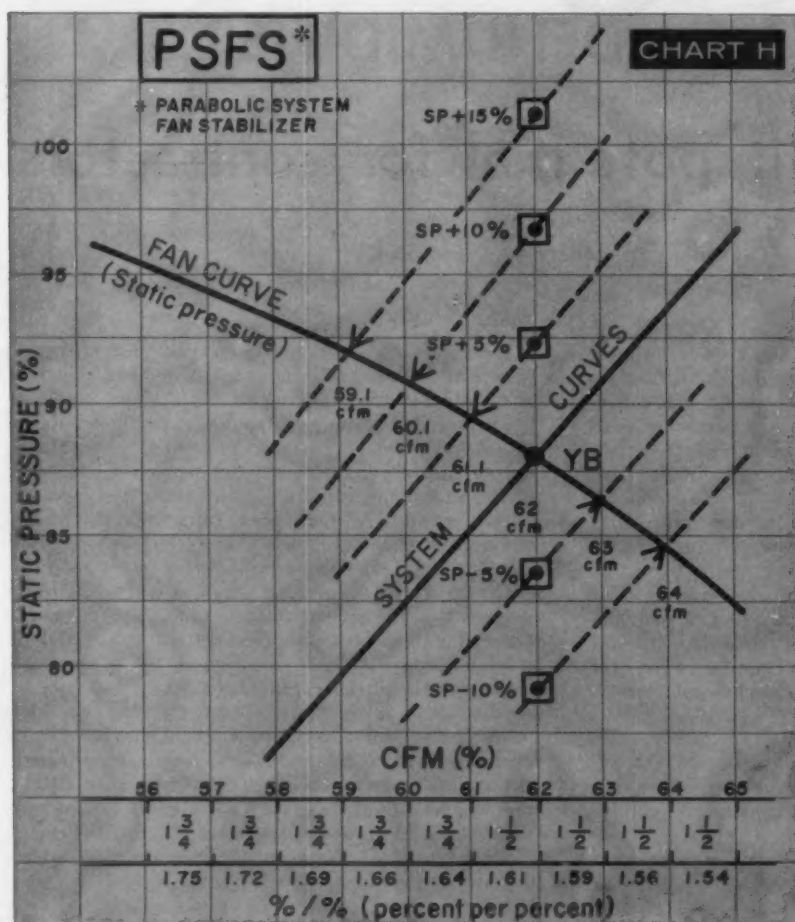
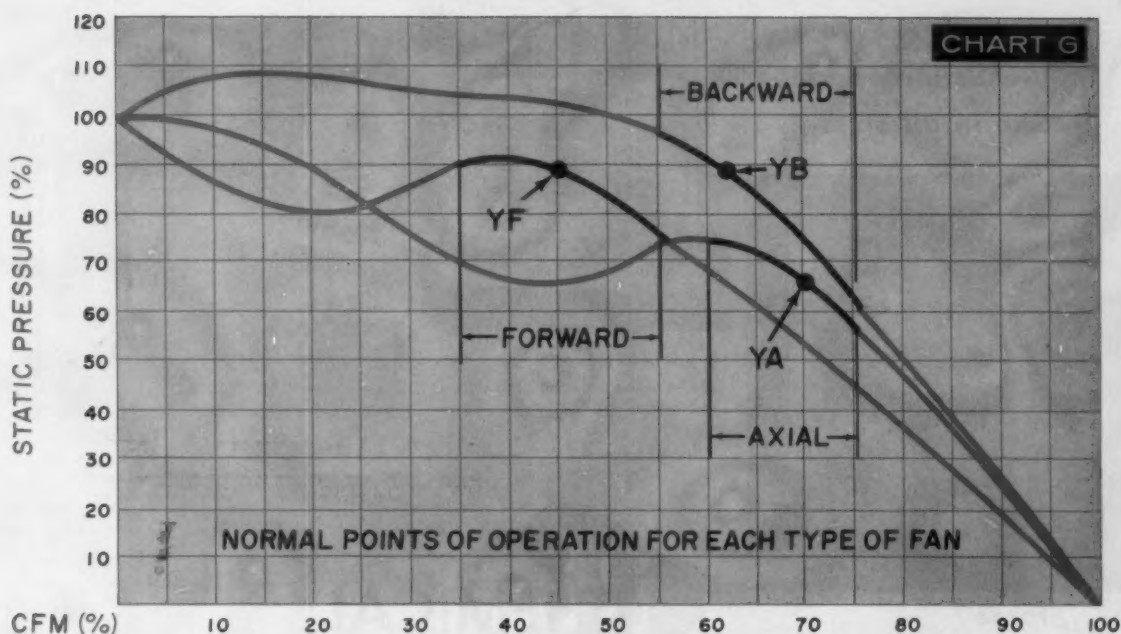
It is assumed that the fan in this system is not changed in any way from the original selection, so fan performance is fixed (refer back to Step 4) and is represented by a single curve.

Where the curves cross is the point at which the system will balance for each static pressure shown. Draw a line straight down from each balance point to the cfm line at the bottom of the chart and you will find the percent of cfm increase or decrease. For ease in reading, the correct cfm values are shown on the chart immediately below each balance point.

At the very bottom of the chart you will find a line that reads "%/% (percent per percent)". The first line of figures above this line gives the actual percentage of change in total cfm for each one percentage point change in cfm. The next line above this gives the rounded-off values for quickly estimating the percentage of change.

**EXAMPLE:** When the SP goes up 15%, the new system curve crosses the fan curve at 59.1% cfm. Dropping straight down to the %/% data you will see that the decrement from 62 to 59.1% is approximately -1%, -1%, 1%, or a total of -5%.

**THIS IS THE SAME VALUE SHOWN IN THE WORRY TABLE** at the beginning of this article, which proves how safely you can use this table to eliminate your worries over static pressure drop in air handling systems.



Tabulation of data shown in Chart H, giving the % change in CFM for specific change in SP.

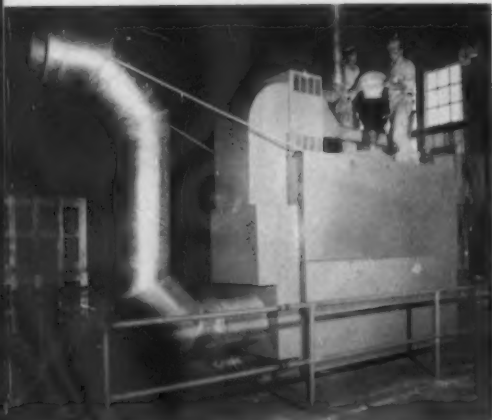
SP	CFM *
+15	-4 1/2 (-5)
+10	-3 (-3)
+5	-1 1/2 (-2)
<b>DESIGN</b>	
-5	+1 1/2 (+2)
-10	+3 1/2 (+3)

\*Numbers shown in ( ) are from the WORRY TABLE, which rounds off all fractions.





**Dehumidifying jobs  
come in all sizes . . .**



**. . . large**

3000-cfm unit maintains 40% relative humidity year-round in this Air Force warehouse.



**. . . small**

27-cfm model on top of gage storage cabinet holds 20% humidity.



**. . . medium**

400-cfm capacity of these four units holds relative humidity to 50% for candy storage.



## CHEMICAL DEHUMIDIFIERS:

# a new profit potential for contractors

ANTHONY HASS, *president, Dryomatic Corp.*

THE SOUTHLAND SWEETS PLANT had been in business for years, producing a quality brand of hard candies. A backlog of orders kept the plant operating at capacity nine months of the year. But in summer, when hard candy is in great demand, the plant was forced to close. Heat and humidity combined to turn the hard candy into a sticky mess as soon as it was produced.

Then an airconditioning contractor sold the plant's management on installing a dehumidifying system. Price tag: \$3000.

Now the plant makes candy the year around in an atmosphere free of destructive moisture. Its annual gross has jumped from \$500,000 to \$625,000. And profits from this additional income more than paid for the dehumidifying system in less than one summer!

WHAT THIS CONTRACTOR DID, you can do too. You too can cash in on this virtually untapped multimillion dollar market for commercial and industrial dehumidifying equipment.

There is a definite need for this type of equipment in a wide range of applications. In many cases, you can sell it on the basis of dollars-and-cents savings, as

in the candy factory example. In other instances, the returns to the customers may not be as immediate or as tangible, but they are just as real.

Uncontrolled humidity often does considerable damage without management recognizing the cause. Make it your business to point out the cause, then tell the savings story, and you'll find that sales come easy.

The chemical dehumidifier is a relatively new product. So what did industry do during the years before dehumidifiers became available?

The answer is simple. Industry did without. It just suffered the consequences of the invisible droplets of water that have been so destructive and costly to many businesses.

The growth of the dehumidifying business is easy to trace.

Before 1945, humidity control was almost unknown. Then, about the same time that airconditioning began to boom, manufacturers began development of dehumidifiers on a limited scale.

The industry gained a real impetus in the early 1950's when the Department of Defense realized that

*Continued on page 48*



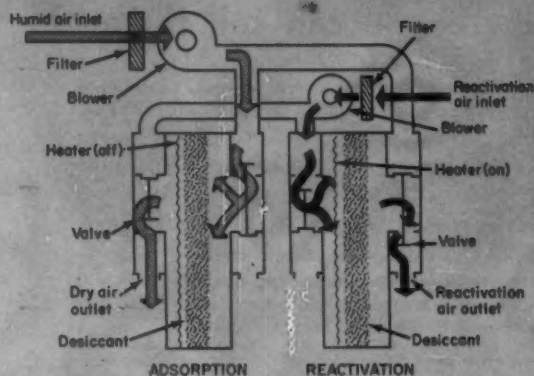
# How do chemical dehumidifiers work?

THE OPERATING CYCLE is simple. The unit draws moist air from the area in which humidity is to be controlled, and passes it over a solid drying agent (desiccant). Through the process of adsorption, water vapor removed from the air collects on the surface of the desiccant. The drier air then is discharged back into the controlled space.

Most models, especially in the larger sizes, use a double bed of desiccant so that one can be removing moisture from the air while the other is being reactivated.

In the reactivating cycle, the unit draws in outside air, heats it enough to make the desiccant give up the moisture it adsorbed during the operating cycle, then passes this heated air over the desiccant bed. Then the air is discharged. On units of small capacity, reactivation heat is generally provided by electric strip heaters. Steam or gas reactivation heaters are more commonly used on dehumidifiers designed for larger capacities.

Duration of the reactivation cycle is automatically controlled by a timer which alternates the operation of the two desiccant beds, supplying a continuous flow of dehumidified air to the controlled area. This periodic regeneration of the drying agent makes it last



indefinitely. It never requires replacement unless contaminated by dirt or liquids.

Dehumidifiers of this type can maintain constant humidity levels as low as 10% rh over a temperature range of 120 F to -40 F. Refrigeration dehumidifiers, by contrast, are quite effective at high temperatures, but lose efficiency below 65 F and will not effectively maintain humidity below 50% rh.

## Where temperature is a problem, add cooling

IN THE ADSORPTION PROCESS, a certain amount of heat is liberated when water vapor is picked up by the desiccant surface. This heat will raise the temperature of the air being dried, so many times it is either desirable or necessary to provide some cooling for human comfort or to satisfy processing or storage requirements.

In systems where the dehumidified air is completely recirculated and only the sensible heat gain must be controlled, an aftercooler cooled by either water or refrigerant is normally satisfactory (see Fig. 1).

If the dehumidifier is used in a single-pass application, or if appreciable quantities of high-humidity makeup air are introduced, it is usually more efficient to use a pre-cooler to condense out part of the moisture, plus an aftercooler to control the outlet temperature (see Fig. 2). Both cooling coils may be supplied from the same refrigerating system.

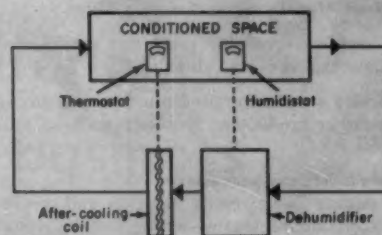


FIG. 1

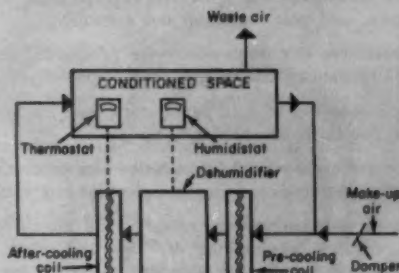


FIG. 2



## Chemical Dehumidifiers: where you can sell them

- Refrigerated warehouses**—for storage of such varied items as cheese, peanuts, military rations, and powdered food.
- Furniture and household storage firms**—for preventing mildew, dry rot, swelling and warping.
- Bakeries**—for keeping flour and sugar dry, and for proper storage of wax paper.
- Telephone companies**—for maintaining proper humidity in switchboard rooms, and for protection of sensitive equipment in unattended dial centers.
- Meat and other food processors**—for curing hams, processing cheese, and packaging cereals and powdered citrus juices.
- Chemical and pharmaceutical industries**—for drug manufacturing, pill production, laboratory work, and product storage.
- Dairies**—for storing milk cartons and dried milk.
- Ceramics manufacturers**—for clay storage and decalcomania production.
- Fur storage and dry cleaning plants**—for keeping furs in good condition, keeping cleaned clothes from wrinkling and losing their shape.
- Candy plants**—for chocolate processing, for dipping and enrobing operations, for keeping candy from sticking or blooming, and for packing and storage.
- Electrical and electronic manufacturers**—for capacitor, coil and transformer winding, tube assembly, instrument calibration, rectifier processing, and supplying dry air to glove boxes and radar waveguides.
- Leather firms**—for drying and storing hides.
- Libraries and museums**—for protecting books, paintings, documents and other valuables.
- Metal working plants**—for preventing rust in storage, and eliminating production problems such as milky aluminum foil.
- Plastics producers and processors**—for speeding production and cutting down rejects in nylon and acrylic molding, for handling thermo-setting molding compounds, for cellophane wrapping, and for drying ovens.
- Precision machining**—for spectrographic analysis, gage rooms, and gear matching and assembly.
- Seed processors and wholesalers**—for prolonging seed life and preventing loss of germinating power.
- Printing plants**—for storing paper stock, and for maintaining precise color register.
- Research and experimental laboratories**—for processing and testing materials ranging from textiles to rocket fuels.
- Government applications**—for underground missile storage, warehouses, mothballing of ships and other equipment, radomes, rocket assembly areas, air-supported structures, and missile control trailers.

*Continued from page 46*

Nike missile bases would become ineffective without protection from humidity. The thousands of operating parts would rust and stick together in the underground storage areas unless some way were found to prevent it. So scores of orders were placed for dehumidifying machines to protect the Nikes.

Then industry began learning lessons of its own from this well publicized example.

Why is this field so wide open to airconditioning and refrigeration contractors? If controlled humidity is so vital to production and storage, why are dehumidifying units just now beginning to be sold in any real volume?

The answer to these questions is simple too. Many executives simply don't realize that lack of proper humidity control is bogging down their operations and resulting in tangible and intangible losses.

Plant management staffs generally rely on their sheet metal and mechanical contractors to suggest equipment to improve plant efficiency. Yet only about 10% of these contractors know anything about dehumidifiers. And at least half of these have never installed one.

So the opportunity is there. But before you plunge headlong into the dehumidifier business, here are some questions you'll probably want answered:

• **What potential does the dehumidifier market offer me?** Tremendous. Conservatively estimated, the value of contractor-installed units will increase from the present rate of \$3 million a year to about \$10 million annually within the next 10 years.

• **How do I get into the picture?** Contact one of the major manufacturers of commercial and industrial dehumidifiers. Tell him you're interested in selling his equipment. He'll be glad to give you all the educational and engineering help you need. Learn all you can about humidity problems and their cure. Make yourself thoroughly familiar with the product and what it will do. Then go call on some likely prospects.

• **How many lines can I choose from?** There are about six major manufacturers.

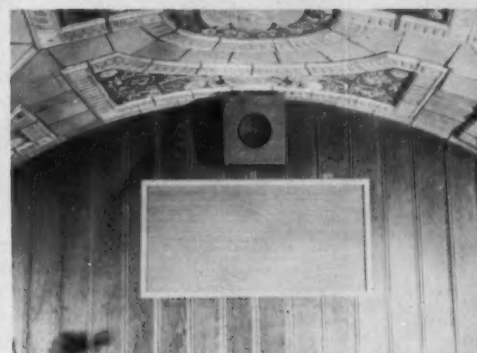
• **Will I have to maintain an inventory?** No. That would be impractical, because you'd have to stock a range of 15 to 20 models to satisfy all job requirements. The manufacturers usually can ship within two or three weeks after receiving your order.

• **Will I need specially trained installation men?** No. Actual installation is simple and can be completed in 1 to 8 hours by following the manufacturer's instructions. Until you become thoroughly familiar with this field, however, it will be wise to ask the manufacturer to send a sales engineer to survey each job. It's often necessary to seal cracks beneath doors, close off central airconditioning systems, or paint walls with air-proof aluminum paint to be sure the dehumidifier will work effectively.

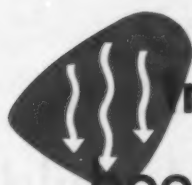
• **What profit is in it for me?** Dehumidifiers range in price from \$1000 to \$5000. Contractor markup generally runs from 1 to 25%. And of course you'll charge your regular rates for labor and materials required in each installation. ♦



**FILTER PANEL** in the mixing chamber of the restaurant's airconditioning system is easy to inspect visually. Filters can be quickly replaced when necessary, as this maintenance man is doing.



**FILTERED AIR** is delivered through special ornamental ceiling outlets (top), and returned through standard wall grilles.



## Improved air filtering boosts restaurant business 25%

YOU CAN PUSH ALL THE AIR you want into a restaurant, and control it at any temperature you like, but if you don't filter it properly you haven't done an air handling job that will provide maximum comfort for patrons.

Convinced of this fact, the Sheraton-Atlantic hotel in New York City completely revamped the air filtering for its Gate of Cleve restaurant. Result: A 25% increase in business that prompted the hotel to provide the same sort of filtering for its three other restaurants.

It all started when the hotel made an intensive study of what was needed to provide the utmost in comfort for customers of its restaurants. This study centered on the problem of air filtration and the effect on room temperature of tobacco smoke and body heat. Gate of Cleve was used as a guinea pig.

This 7533-sq.ft. restaurant, decorated in old Dutch style, will seat 592 people. It is airconditioned by a 60-ton unit in the first basement.

*Continued on page 50*



## AIR HANDLING

The hotel took three major steps to improve the indoor climate of this restaurant:

- Installed a recirculating vent to draw out the stale air from the room.
- Installed a new set of glass doors at the outer entrance to prevent escape of the freshly filtered recirculated air.
- Improved air filtration by installing "Ulok" Dynel modacrylic filtering units in the mixing chamber to clean the polluted air drawn from the restaurant before it is mixed with filtered fresh air and recirculated throughout the restaurant.

Here's how the revamped system works.

Fresh air enters the heating and cooling system through an intake vent at street level. It passes through dampers into the mixing chamber, which is equipped with a single bank of filters consisting of four rows of three units each. Four of these filters measure 25 x 20 x 2"; the other eight are 16 x 20 x 2".

The air is drawn through the filters by a 10-hp. centrifugal fan with a discharge of about 17,000 cfm. It then passes through direct expansion and chilled water coils and into the distribution ducts, which have a discharge of about 850 cfm.

The insulated ducts run above the restaurant ceiling, which is designed in a series of arches to form eight separate coves. Specially designed outlets are located in each cove. These outlets, styled to blend

with restaurant's decor, combine the functions of air distribution and lighting.

The ornamental lighting unit is built into the bottom of the outlet box, which extends several inches below the ornate ceiling. The conditioned air is delivered through grilles on opposite ends of the outlet box.

The airconditioning system for the restaurant is regulated by an automatic temperature control set to the desired temperature. But the system operates only during business hours. It is turned off manually each night, then restarted in the morning.

Since installation of the new filters, the management has found that they can wait until 11 a.m. to turn on the airconditioning in preparation for the restaurant's noon opening. Previously it had been necessary to start the system at 9 a.m. in order to clear the air by noon so that patrons would be comfortable. This saving in operating time obviously saves money.

Building superintendent James Murrell likes the fact that the new filters are easy to maintain. He points out that all of the new filters for all four restaurants in the hotel can be inspected by two men in a few hours to determine which ones need replacing. And the replacement itself is quick and simple, he says.

The filters last an average of three months, Murrell reports. Under the old setup, the hotel bought a filter maintenance contract and the filters were changed about once a month. This is no longer necessary. Although initial cost of filtering is about the same, he declares, the hotel now saves through the longer life and improved performance of the new filters. ♦



## High-pressure air helps solve conditioning problems in old building

HENRY LEFER, eastern editor

THE 30-YEAR-OLD Federal Building in Newark, N.J., plainly was never designed for airconditioning. Built in classic monumental style, it contains 500,000 sq.ft. of floor space in its five stories, basement, and attic.

Further complicating the problem, the building is put to many varied uses, each of which has different airconditioning requirements. There's a postoffice, with mail handling and administrative areas, as well as a two-story public area for stamp sales. There are Federal court rooms, judges' chambers, and jury rooms.

There are offices for Government agencies, and even a target range in the basement for the FBI.

To top it all off, the airconditioning demands of the General Services Administration, which operates the building, were strict:

- No presently used floor space to be taken for the airconditioning system.
- Work to proceed with least possible disturbance of activities in the building.



- Architectural spirit of public and office areas to be retained.

- Airconditioning in court rooms and judges' chambers to be noiseless.

- The system for the FBI areas to be separate from the rest of the installation.

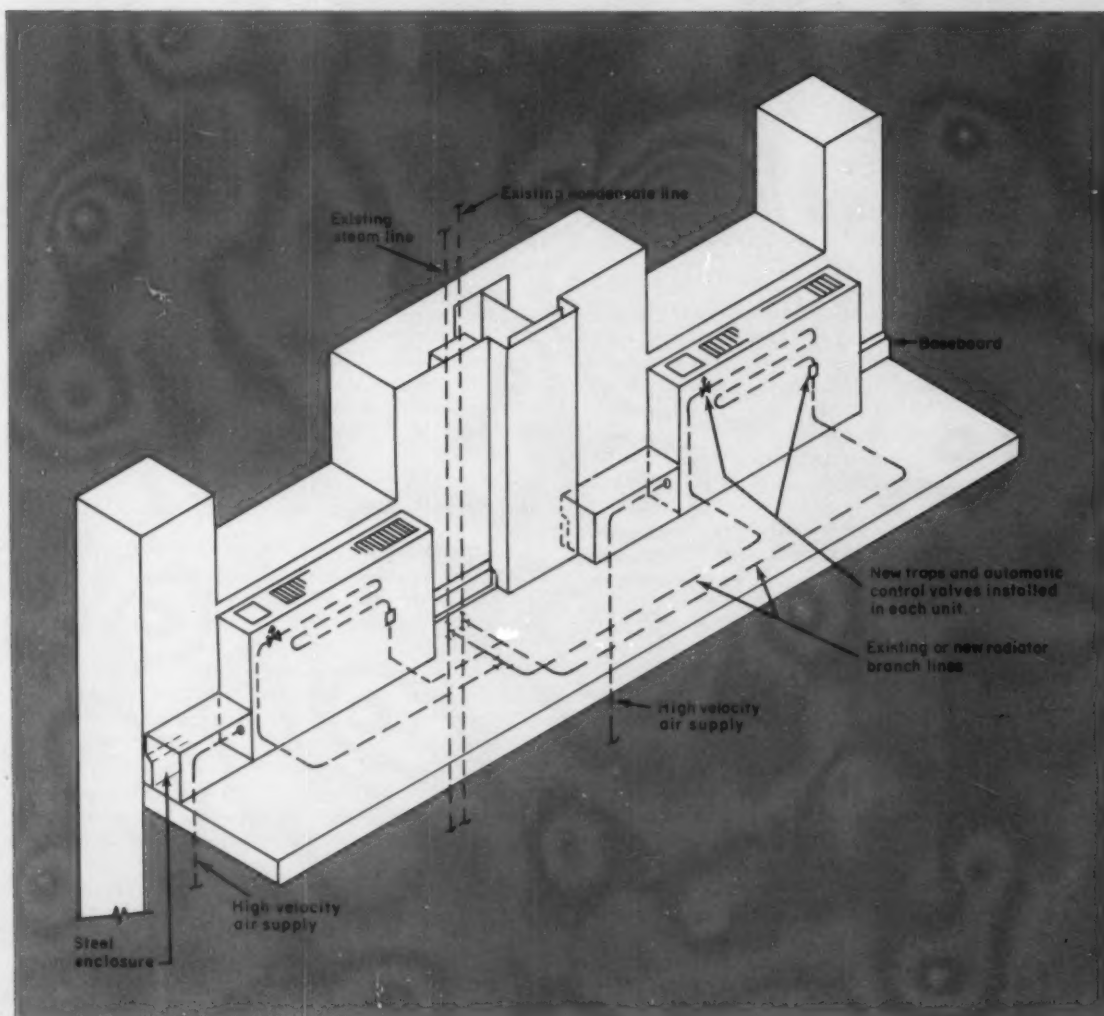
- Cost to be kept at rock bottom.

As laid out by Engineers, Inc., Newark consulting firm, the system will meet these demands effectively, yet without frills. Joseph A. Rosenthal, president, told me that in rising to the challenge of these rigid job requirements his company developed one of the most interesting of the several hundred airconditioning systems it has designed.

This system will provide 1250 tons of airconditioning at an estimated cost of \$1½ million. It is being

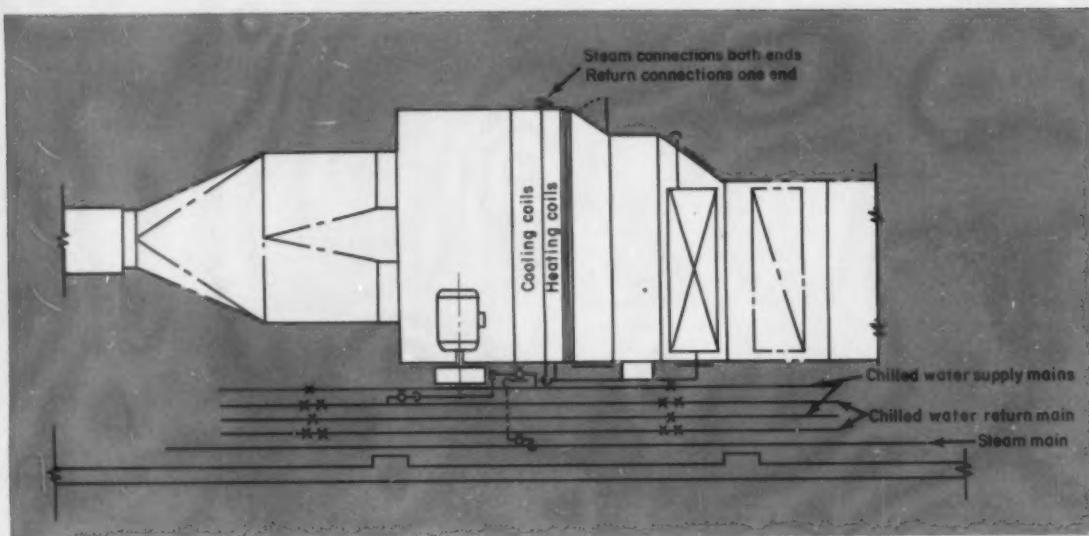


*Continued on page 52*



**HIGH VELOCITY COOLING UNITS** combined with existing steam heat provide individual control, cut piping requirements.

## AIR HANDLING



**REMOTE AIR HANDLING UNITS** keep help system noise level low. Return air is ducted from corridors and other public areas.

installed with practically no structural changes, and there will be little visible evidence of it when the job is completed. It will permit year-round airconditioning, with simultaneous heating and cooling in different zones when required.

Flexibility of the system, and the fact that it is being installed with minimum disturbance to the building and its occupants, is made possible largely by combining these factors: an existing steam-return heating system; a new type of air induction terminal outlets — about 1500 of them — which will replace the old cast iron radiators of the existing steam system; and high pressure cooled air delivered by 25 remotely located air handling units of various capacities.

The terminal outlets incorporate heating coils, rather than cooling coils. The steam is kept on the year around, but is admitted to the heating coils of the outlets only upon command of individual thermostats.

### **Year-round steam modulates cooling**

When the airconditioning system is operating, cooled air is piped to each terminal outlet. If this air is too cold to satisfy demand conditions, the thermostat opens the steam valve at that outlet just enough to bring the air up to the desired temperature.

Since the design makes use of the old steam system, the only additional piping needed in the various cooled areas was 6 or 8" risers to carry the high pressure air to the outlets. These risers fit snugly in existing jogs formed by columns at the window walls. When boxed in and painted the original appearance of the columns will not be noticeably changed, and hardly any usable floor space will have been lost.

For the most part, return air to the air handling

units is ducted from corridors and other public areas, which serve as plenums. None of the old ducting from the exhaust and ventilating system could be used for this purpose, however, because either its size or location was unsuitable.

The large number of terminal outlets makes it easy to provide each area with its own special requirements. Example: the courtrooms call for 30% fresh air, the locker rooms 50%, postoffice work areas 15 to 25%, and offices 20 to 25%. The proportion of fresh air and the degree of humidity is controlled at the air handling units. Only the temperature is controlled at the outlets.

### **Remote system holds noise level low**

The remote location of the air handling units helps make the system extremely quiet. Fifteen of the 25 units are in the attic, which in the past housed exhaust fans and other mechanical equipment; six are in the basement; and four are on the third floor.

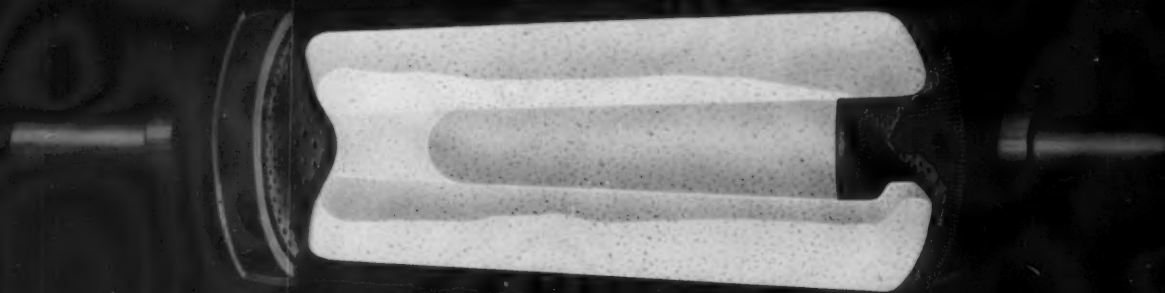
The high pressure units are designed to deliver from 15,000 to 19,000 cfm at 7" H<sub>2</sub>O static pressure. Ratings of the low pressure units range from 58,000 cfm at 3" static pressure down to 5000 cfm at 2".

All refrigerating machinery is in the basement. It consists of two electrically driven 550-ton compressors and (to comply with GSA requirements) a separate 150-ton compressor for the courtrooms and associated areas.

The two-cell cooling tower is mounted on the roof a third-story setback at the rear of the building, where it is concealed by existing walls and is far enough away from the nearest windows so that noise is no problem. It is designed to cool 3750 gpm of condensing water from 95 F to 85 F at a wet bulb temperature of 75 F. ♦



ANNOUNCING... THE GREATEST ADVANCEMENT  
IN REFRIGERATION DRIERS SINCE MOLECULAR SIEVES!



*new* **KMP<sup>®</sup> FILTER-KORE** *drier...*  
*the only solid core drier made of*  
*100% Molecular Sieves*

**EXCLUSIVE!**  
**LOWEST PRESSURE**  
**DROP** per unit area  
of core of any  
block desiccant

**EXCLUSIVE!**  
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inch of core of any  
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**EXCLUSIVE!**  
**GREATEST ACID**  
**REMOVAL...**  
Maximum protection  
of system from acid  
and sludge after  
motor burnout

**KMP**

KENMORE MACHINE PRODUCTS, INC. • LYONS, NEW YORK

# KMP FILTER-KORE *drier...*

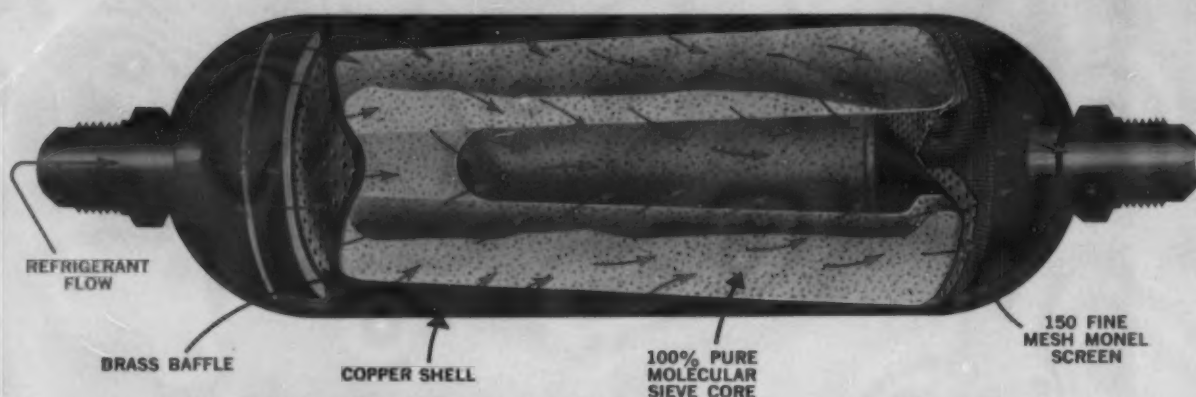
HIGHEST CAPACITY... MOST EFFICIENT AND TROUBLE-FREE

By eliminating plastics, fibre board, cotton and other foreign materials from the inside of the drier and by using a solid core of 100% pure Molecular Sieves without diluents, the KMP FILTER-KORE drier gives maximum protection (better than any other desiccant) to the system from acid and sludge.

FILTER-KORE delivers fine, selective filtration without powdering or channelling of refrigerant through

the core. The drier is manufactured from non-corrosive materials compatible with refrigerants and oil. Before sealing the highest degree of reactivation is used of any block desiccant—600°F at 500 micron vacuum.

For the most efficient, the longest lasting, the most trouble-free drier made, your selection should be KMP FILTER-KORE.



Complete Range of Sizes from 1 Ton through 15 Tons.

## COMPARISON OF BLOCK DESICCANT DRIERS

	DRIER A	DRIER B	DRIER C	KMP FILTER-KORE
1. USE ALL MOLECULAR SIEVE	NO	NO	NO	YES
2. ACID REMOVAL	GOOD	GOOD	GOOD	EXCELLENT
3. FULL FLOW FILTRATION	YES	YES	YES	YES
4. HIGH TEMPERATURE WATER CAPACITY	FAIR	FAIR	FAIR	EXCELLENT
5. WILL HOLD AS MUCH MOISTURE AT 75°F AND 125°F	NO	NO	NO	YES
6. ALL NON-CORROSIVE METAL INTERNAL CONSTRUCTION	NO	NO	NO	YES

## KMP FILTER-KORE SPECIFICATIONS

Model Filter-Kore	SAE Flare	Dia.	Length	Water Capacity Ratings				Filter Area Sq. In.	Recommended Tonnage	
				R-12		R-22			R-12	R-22
1FK	¼"	1½"	4¾"	43	43	32½	32½	9	1	¾
2FK	¼"	1½"	5¾"	70	70	53½	53½	12	2	1
*Also available in ⅜ SAE Flare										
3FK	¼"	1½"	6¾"	100	100	75	75	13	3	1½
*Also available in ⅜ and ½ SAE Flare										
4FK	¼"	2¼"	7 7/8"	160	160	122	122	20	4	2½
*Also available in ⅜, ½ and ¾ SAE Flare										
8FK	⅜"	2¼"	9¾"	325	325	247	247	29	8	5
*Also available in ½ and ¾ SAE Flare										
10FK	½"	3"	9 1/4"	400	400	302	302	35	10	6
*Also available in ⅜ SAE Flare										
15FK	½"	3"	11 1/4"	600	600	455	455	54½	15	9
*Also available in ⅜ and ¾ SAE Flare										

NOTE: FILTER-KORE DRIERS AVAILABLE IN ALL SIZES WITH SOLDER CONNECTIONS

**KMP**

KENMORE MACHINE PRODUCTS, INC. • LYONS, NEW YORK

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This sign proves that . . .

## ICEMAKER MARKETS ARE EVERYWHERE

**SYMBOL** of increased sales is this automatic icemaker outside one of the gasoline service stations that Alabama distributor Earl Moore has sold on the ice idea. Moore supplies the curbstone sign as an added merchandising aid.



SOMETIMES YOU HAVE TO INVENT MARKETS for your product. One refrigeration dealer did it for his ice machines. Result: a booming sales volume.

Earl Moore owns Moore Equipment Co., Dothan, Ala. He found that most of the obvious outlets in his sales area, such as taverns and restaurants, already had icemakers. But, he discovered, there was only a small number of automatic ice vendors and these weren't convenient for the customer. Either they weren't open Sundays or they were too far away.

So the potential was there. These people would appreciate being able to buy ice when and where they wanted it. Moore found his new markets and installed about 100 icemakers in such unlikely places as service stations, fishing and hunting camps, and food stores.

The cost of operating an icemaker is small because the local commercial power rate is low so the retailer realizes a big profit margin.

Moore started selling his machines to 12 service stations. He hit them hard with these advantages, then usually clinched the sale by pointing out that the machines also attract gasoline customers.

Moore, or one of his salesmen, gives new customers a folder showing the price, cost of operation, and other features of the Scotsman icemakers. The com-

pany also gives merchandising help in the form of three or four outdoor signs.

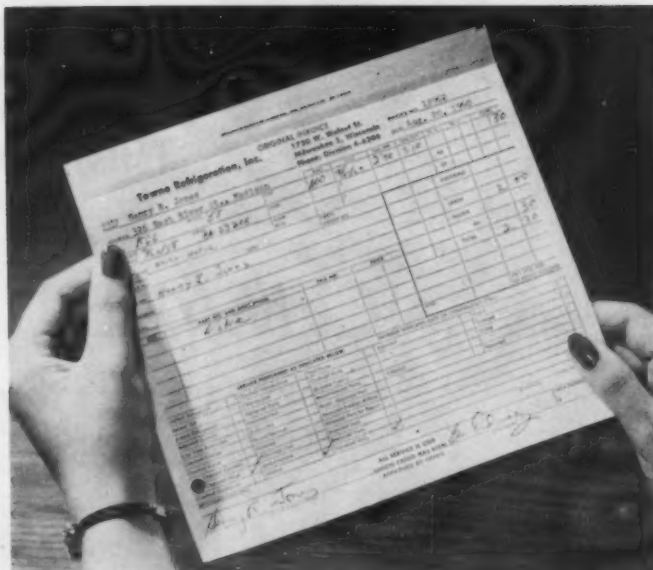
The stations evidently realized the value of icemakers because now Moore has a lot of prospects referred to him by the stations he's sold.

"As we forecast," Moore says, "the service station operator can charge as much as 2 or 3 cents a pound for ice that costs him about 10 cents for 100 lb., including all costs such as depreciation, power, and repairs."

With the service station market going strong, Moore next went after the fishing and hunting camps that stretch for hundreds of miles along the Gulf Coast and inland lakes. The hunters and fishermen buy ice to cool beer, soft drinks, and water. Tourists buy ice mostly to cool food and milk.

Preventive inspection and maintenance keep service calls down. The most common cause of machine breakdown is dust in the compressor. When this happens, though, Moore shows the customer how he can fix it himself. All he has to do is remove the cover and brush out the dust. On more serious failures, Moore doesn't hesitate to send his service trucks on calls covering up to 100 miles to keep up the company's good service reputation. ♦

# One-step invoice saves time



SAVING TIME MEANS MONEY to any business and Towne Refrigeration, Inc., of Milwaukee, Wis., is no different. Its vice president and accountant, Francis F. Amrhein, has developed a workorder-invoice that saves a great deal of time daily.

It has these advantages also:

- Faster billing to customers
- Practically eliminates bookkeeping errors
- Cuts filing space

The system depends on a specially designed 2-sheet invoice and a Thermo-Fax dry process copying machine.

**The invoice**—This 8½ x 7" form consists of an original and one carbon, both marked "original invoice." Across the top of each sheet are spaces for the customer's name and address and the invoice number. Then comes space for these:

- Make and model of item
- Materials and labor
- Name of serviceman
- Mileage
- Time spent on call
- Billing address

There are 40 jobs listed on the bottom of the sheet, with squares to be checked by the serviceman. There are also spaces for remarks, recommendations, estimates, and the customer's signature.

The serviceman fills in the form after completing a call and gives the carbon to the customer. He turns the original in to the office.

**Billing procedure**—Amrhein quickly checks the original invoices to see if they are filled out properly. Then he copies each on the copying machine on cut-to-size copying paper. He slips the copy into a win-

dow envelope, and each customer's bill is ready for mailing.

He files the originals by name as accounts receivable until paid. Then he files them according to invoice number.

Amrhein reports a tremendous saving in time. "Under the old system, we had to do much copying, transferring information from call cards to work reports to invoices. During the busy season, I often worked nights to get out invoices that were often for month-old calls," he says.

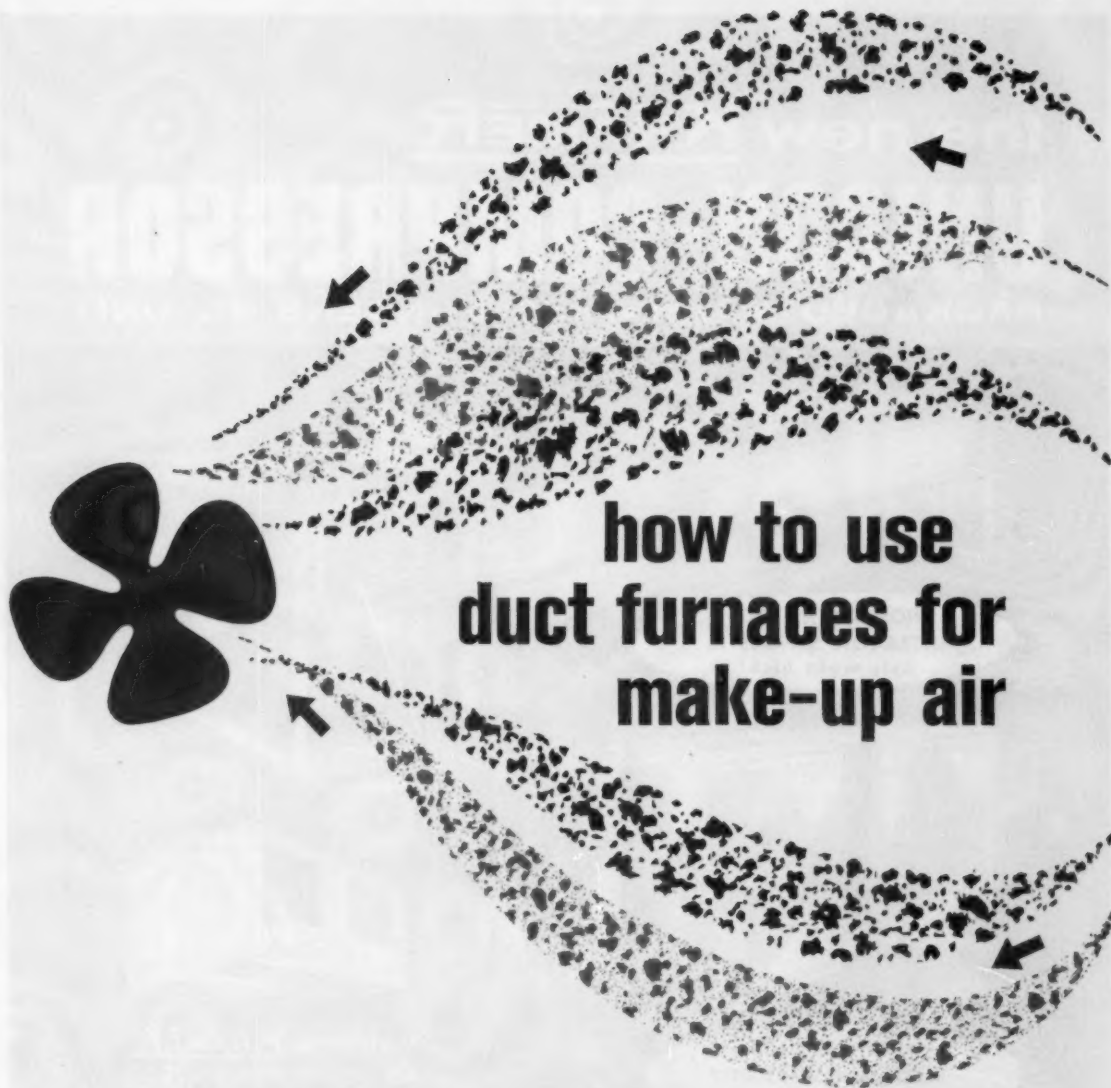
Because Amrhein knew the procedure and terminology, he could do 20 invoices an hour the old way. But a clerk could only do half as much. Now, Amrhein says, "I can do 20 invoices in just a few minutes."

**Pricing**—Amrhein often had to do pricing on invoices, although the servicemen were supposed to do it. Now, he says, men put on prices because they know they are working with the original invoice.

A customer gets his bill while the memory of the work is still fresh. It appears to have speeded up bill payments, Amrhein says, but the big benefit is still in time saved in handling the invoices.

**Delinquent accounts**—Amrhein uses pink copy paper in sending out notices of unpaid bills. He also types out a brief reminder on a small slip of paper, using the slip as an overlay in making copies. The note appears as part of the statement the customer receives.

The call cards, work sheets, invoices, and other material used in the old system have been discarded. This saves three-fourths of the filing cabinet space. ♦



## how to use duct furnaces for make-up air

**Free from Reznor:** Learn about this profitable use of duct furnaces along with other valuable information on make-up air in our just published handbook "What to Consider in Designing Make-Up Air Systems."

Manufacturing plants, chemical, food and material processors, restaurants, bakeries and dry cleaners are becoming increasingly aware of the need for make-up air. They now realize that bringing in clean, heated replacement air through a duct furnace can prevent undesirable

drafts and the infiltration of dust, dirt and fumes.

Reznor's handbook on make-up air is one of a new series of Reznor Heating Handbooks to help you solve commercial and industrial heating problems. For your copy, published by the world's largest manufacturer of gas unit heaters, fill in the coupon and mail to Reznor. Or, for more information, call your Reznor distributor or nearby Reznor district office listed in the Yellow Pages under "Heaters—Unit."



# REZNOR HEATERS

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city \_\_\_\_\_ state \_\_\_\_\_

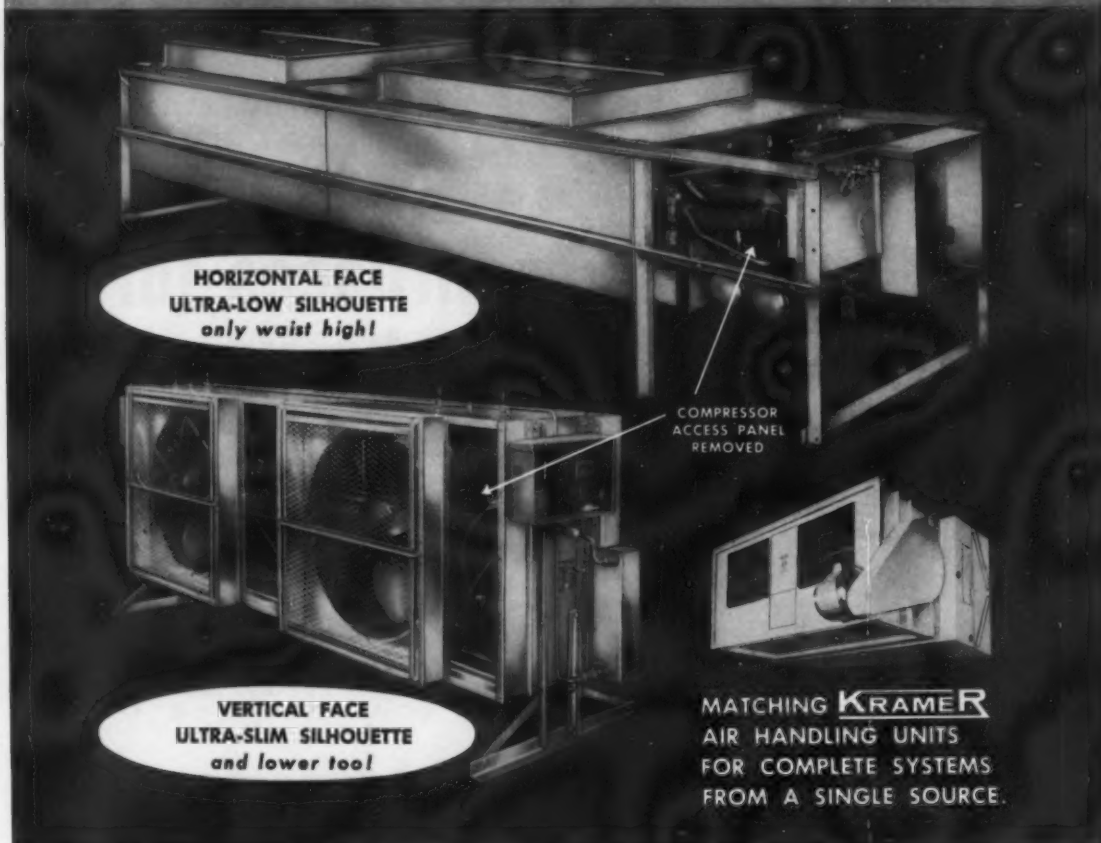
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*From the leader in air-cooled condensing*

the new **KRAMER**

# UNICON-COMPRESSOR

PACKAGED WATER-FREE CONDENSING UNIT



## 3 to 70 TONS—HORIZONTAL or VERTICAL FACE

The low, slim-trim lines of the new Kramer air-cooled UNICON-COMPRESSOR give it unequalled flexibility in any architectural setting. Space saving outdoor design and low, low operating weight combine to reduce structural and engineering problems. Easy and economical to install, the complete packaged UNICON-COMPRESSOR has matchless accessibility for servicing. Its

corrosion resistant aluminum casing, and its frame galvanized after fabrication, eliminate painting maintenance.

And remember—no place in the U. S. A. is too hot (or too cold) for the UNICON-COMPRESSOR. With the patented Kramer Winterstat it will operate any time of the year, without adjustment, even in the dead of winter.

Write for bulletin C460B.

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47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

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# Applications **MANUAL**

HUGO C. SMITH, consulting editor, refrigeration

## Ducts give best air distribution with standard product coolers

WE STIRRED UP a lot of comment with our discussion of the use of "happy medium" coils (high surface, low velocity) for refrigerating tall story 34 F warehouses. This article was published in the Applications Manual section of our February issue. We don't want to create the impression, however, that this is the only way an application of this kind can be satisfactorily handled.

You'll find many applications, in fact, where large product coolers, both wall mounted and ceiling mounted, are very well suited for this heavy duty service.

A few years back, some manufacturers discontinued making a heavy duty product cooler. For the most part, these were units using horizontal coils and having heavy galvanized steel cases.

Recently, however, several manufacturers have entered this field with an improved light weight version

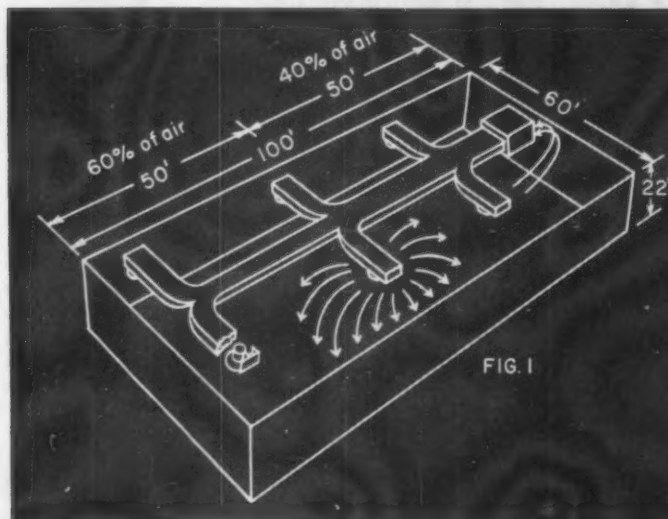
of the product cooler for both ceiling and floor mounting. Most of these units feature vertically mounted coils with the face area exposed. This is definitely an advantage, because it is easy to spot frost formation on the coil.

Some of these new product coolers also feature enclosed motors. Some have aluminum cases which make them weigh far less. This lighter weight means you can suspend them from the ceiling more easily and with a minimum of additional support.

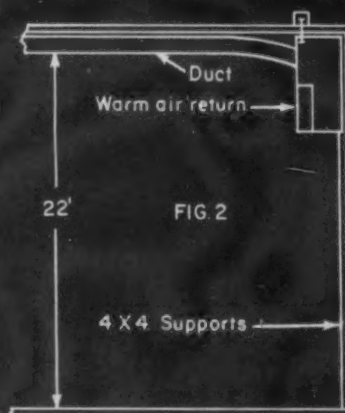
In a 20' high storage room it's not wise to mount vertical product coolers on the floor, even though they are designed for this type of application. Here's why:

► The unit occupies valuable floor space that the warehouse operator could put to more profitable use.

*Continued on page 60*



**PROPER AIR DISTRIBUTION** pattern for ceiling mounted horizontal product cooler is shown in Fig. 1. Branch ducts with circular diffusers put cool air where it's needed; warm air returns to back



of unit at ceiling level. Fig. 2 shows one method of mounting vertical product cooler high on the wall to save floor space, minimize possibility of damage, and keep coil clean.

## MINIMUM INVENTORY— GENEROUS PROFITS

Service Air Conditioning Controls with  
Identical Parts Used in Original Equipment



## RBM REPLACEMENT KITS

For the first time, RBM offers kits for direct replacement of the magnetic controls it has engineered and built as original equipment for all major air conditioning manufacturers. Their requirements have been consolidated into a few replacement kits. This, plus same-day-shipment of orders from the Chicago warehouse stocks, keeps your inventory down. Because RBM original equipment and replacement controls are manufactured on high volume production lines, costs are low... and you benefit from the saving in generous profit margins.



Wholesalers... be sure and ask for a free supply of the new RBM pocket size REPLACEMENT KIT BROCHURE. Your customers will appreciate them.

Order your replacement kits from our Chicago Warehouse, 3501 W. Addison, Chicago 18, Illinois.



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## APPLICATIONS MANUAL

► It is exposed to damage by lift trucks, unless it is expensively protected.

► Floor mounting creates a poor circulation pattern because the coldest air in the room, lying at floor level, is continually being returned to the unit.

► Workers may be bothered by drafts at floor level caused by this circulation pattern.

► The coil tends to pick up floor dust and other foreign matter much more rapidly than when the unit is mounted higher in the room.

Many tall story refrigerated warehouses are equipped with steel racks so that pallets may be set two high under the rack and two high over it. These racks provide excellent mounting facilities for vertical product coolers, and you can use them easily for this purpose.

### Air distribution is big problem

If you mount a product cooler at one end of a long room, and connect it to ductwork running the length of the room, you'll find it difficult to maintain even temperatures throughout the refrigerated area. Because all of the cold air is being returned to one end of the room, it will tend to run colder nearer the unit than at the opposite end.

To compensate for this, design your air distribution system so that 60% of the total cfm is diffused in the far half of the room and only 40% in the half of the room in which the unit is located.

Many application engineers prefer to use branch ducts leading to ceiling diffusers, rather than to simply space outlets at intervals in the side of a long duct. The reason for this is that air throw from side outlets may vary greatly from one outlet to another. Ceiling diffusers will give a much more even distribution pattern, as shown in Fig. 1.

Generally speaking, ductwork should be sized to 1/10 friction loss per 100' of duct. Product zone air velocity for fresh produce and meat storage should not exceed 35 fpm. In fact, 20-25 fpm is most desirable.

### High wall mounting is easy

One method of wall mounting for standard vertical product coolers is shown in Fig. 2. If you use a light weight unit, mounting it in this manner is easy.

Use one of the fork lift trucks in the warehouse to raise the unit to the desired height. Then fasten a 4 x 4 brace against the wall to form the back support. If there is crawl space above the cooler you can run steel bolts through the top of the unit casing, through the insulation, and into sleepers placed across the ceiling beams.

In either type of installation, ceiling mounted or wall mounted, the face of the coil is readily visible from the floor of the cooler. The warmest air from the top half of the room is returned directly to the coil. The coil is not occupying valuable floor space, and it is not apt to be damaged by normal warehouse operations. ♦

# EVERY **B&G**® COMPONENT IN THIS TYPICAL INSTALLATION IS ALIVE WITH STAR FEATURES



## B&G CONDENSERS

Lighter, more compact units, featuring quiet, vibration-free operation, uniform gas distribution, cleanable tubes and higher operating efficiencies.



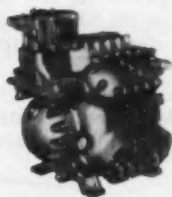
## B&G EVAPORATORS

See illustration at right for features which give these units outstanding superiority.



## B&G SUCTION LINE HEAT EXCHANGERS

Aid thermal expansion valve operation, prevent liquid slugging.



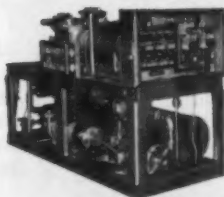
## B&G COMPRESSORS

Precisely engineered for vibration-free operation with all the advantages of "open" units. All units have one bore—a few interchangeable parts service them all.

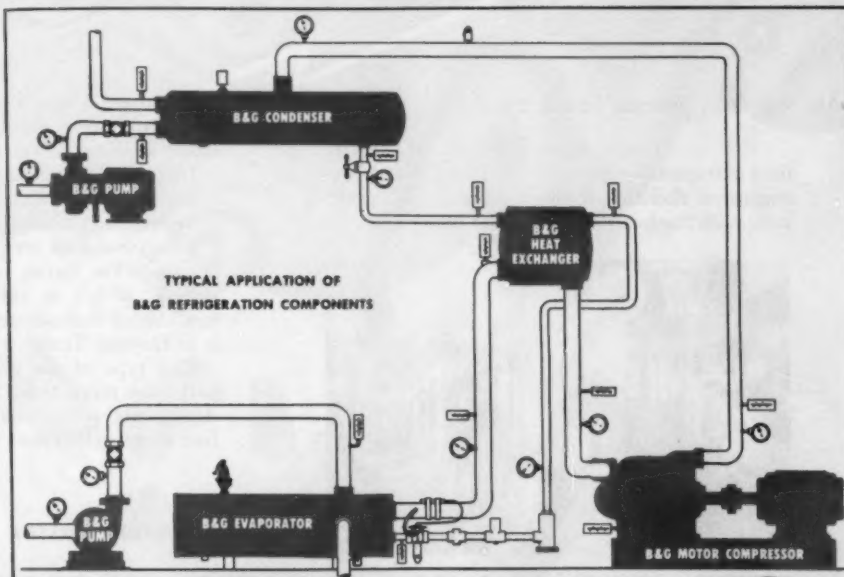


## B&G CENTRIFUGAL PUMPS

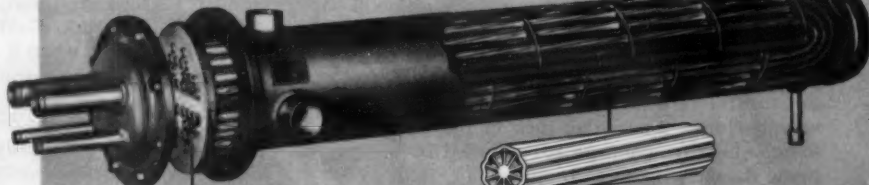
A full range of quiet pumps for refrigeration and air conditioning systems.



TYPICAL APPLICATION OF  
B&G REFRIGERATION COMPONENTS



"REF" EVAPORATOR...Featuring non-slugging design...tube bundle proof against freeze-up damage...positive oil return.



**SERRATED  
TUBE HOLES**  
Assure leak-free  
joints between  
tube sheet and tubes



**SPECIAL DESIGN COPPER TUBING**  
Fluted tubing provides positive and permanent mechanical bond between tube and inner fin for all temperature variations—positive contact throughout 180° bend. Inner-fin tube triples refrigerant heat transfer surfaces. Centrifugal force created by the twisted spline holds liquid refrigerant against tube, minimizing slugging and pressure drop.

B&G makes a complete line of refrigeration and air conditioning components—with many commonly used sizes available for immediate shipment from factory stock!

These are quality units throughout! B&G Evaporators and Condensers all offer plus values in efficiency and rugged, long-life construction. They are manufactured by methods which hold shell diameters exact and free of distortion. This permits tight fitting baffles with minimum liquid slippage, greater efficiency and easy replacement of tube bundles if ever necessary.

All units are built to A.S.M.E. Code requirements and are so stamped.

When selecting pumps, B&G Series 1522, 1531 and 1510-B Centrifugal Pumps invite your most critical comparison. They are of vertical split case design, equipped with the exclusive, leak-proof "Remite" Mechanical Seal and noted for quiet, dependable operation.

## B&G PACKAGE LIQUID COOLERS

A completely integrated and assembled water chiller—the only unit of its kind with all major parts designed, built and guaranteed by one manufacturer.



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# RECENT *Installations*

## Air curtain keeps food cold

LARGE CONTINUOUS AIR curtains for food refrigeration provide 400 linear feet of refrigerated shelving at two California supermarkets, with the heart of the system being a Recold



"DFW" closed water system. The chilling units afford close control of head pressures under all load and operating conditions, cut down scale and mineral deposits, and permit the addition of extra systems in the future.

Each store has 28 open-type, belt-driven compressors with receivers and water-cooled condensers. The battery, with over 200 hp, is mounted on a 2-tier steel rack in the machine room, where temperature is controlled by automatic dampers opening to outside air. Both circulating pumps can handle the full cooling load.

## Rooftop compressor saves space

THE INSTALLATION of a compressor on the roof of an ice cream shop in Paducah, Ky., illustrates a space-saving idea that can be used for many buildings. The air handling evaporator was also installed outdoors, mounted just below the Kramer Trenton compressor, and discharges cooled air to the interior of the building through a register set in the wall. This arrangement of equipment reduces ductwork and refrigerant piping and also eliminates equipment and its noise from the inside of the building.

## Zoned cooling cuts school's costs

AN INDIVIDUALLY-CONTROLLED zone cooling system is the main feature of the first completely airconditioned elementary school in Southeast Texas. The system, which also has gas heat, is said to be the first of its kind to be

adopted for a major school project. The building's windowless design and this system have resulted in low construction and maintenance costs.

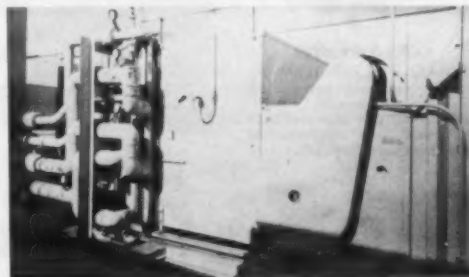
Individual temperature control in the offices, classrooms, and cafeteria-auditorium is obtained by circulating chilled water through a natural gas engine-driven reciprocating compressor. The engine-jacket forces hot water throughout the system, which is automatically controlled by modulating thermostats in each room. The school is in Dayton, Texas.

This type of gas cooling and heating system will save more than \$110 a month in utilities costs alone, while resulting in a low per square-foot construction cost of \$9.32.

## Huge system passes 115 F test

A MASSIVE COOLING SYSTEM, reportedly the biggest airconditioning system west of the Mississippi—at the Research and Development Facility of Thompson Ramo Wooldridge, Inc., Canoga Park, Calif.—passed its first heat test last summer when it kept 383,500 sq.ft. at a cool 74 F, despite outside temperatures up to 115 F.

The system now consists of 2500 tons and will have 5000 tons when fully developed. It features a battery of Recold multi-zone units. A central



plant built around a fan-coil distribution system furnishes cooling on schedule and in volume throughout the plant. A spread of two 100 x 200' spray cooling ponds are used for heat rejection; the ponds have a total capacity of 330,000 gal. of water.

From each pool rise 120 1½" heads, bunched in 20 clusters of six heads each. The water system passes water through the heads to be sprayed in a mist into the air and cooled down to 89-94 F. Each of the plant's seven buildings is serviced by six 35,000 cfm air handlers employing 10% outside air, with the balance recirculated.





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Our new patented, super-speed equipment saws short tubing lengths at 100,000 pieces per hour. Quality is unbeatable too. Since tubing is cut *before* annealing, ends are practically burr-free. If needed, high-speed brushing produces the most beautifully finished ends you've ever seen.

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# Wholesaler **ACTIVITIES**

## Sorenson elected ARW president; board proposals get group okay

Members of Air Conditioning & Refrigeration Wholesalers held their second convention in less than four months when they met in Chicago, Ill., Feb. 10-13. E. Peter Sorenson was elected president for 1961. He's president of Airo Supply Co., Chicago.

Both the board of directors and those members at the 26th annual convention approved several constitutional changes. The board has submitted these revisions to the entire membership for final okay.

Here's what the board approved:

- An outline of objectives for the association, designed to broaden the group's basic activities.
- A revised method of electing new members to the association.
- A change in the constitution regarding regions and regional membership.

An advertising program was presented to ARW. Theme is "Putting You in ARW's New Look," which will consist of personalized letters to manufacturer suppliers listing the many services offered by ARW members to trade groups.

A concentrated program of direct mail will be sent to non-affiliated wholesalers to encourage their joining ARW.

Irv Fajans, chairman of the trade relations committee, outlined the resumption of ARW's relations on a national level with a similar committee of Refrigeration & Air Conditioning Contractors Association. This is a step, Fajans reported,

### IN APPRECIATION

for the efforts of The Refrigeration & Airconditioning Business magazine in reporting the activities of Air-Conditioning & Refrigeration Wholesalers and its members during 1960, and of promoting the importance of the wholesaler to the industry, ARW president Pete Sorenson (left) presents a suitably engraved plaque to Jim McCallum, editor.



**NEW OFFICERS** and directors of Air Conditioning & Refrigeration Wholesalers were elected at its convention in Chicago, Ill., in February. Seated (left to right) are C. G. Koopman, Boston, Mass., retiring director Region 1; Paul Bodwell, Harrisburg, Pa., secretary and director Region 3; W. C. Miessamer, Phoenix, Ariz., immediate past president and director Region 9; E. Peter Sorenson, Chicago, ARW president and director Region 6; E. H. Davey, Akron, Ohio, vice president and director Region 5; and E. S. Diggle, Columbia, S.C., treasurer and director Region 4. Standing (left to right) are Paul Cato, Ft. Worth, Texas, director Region 8; Harry Dawson, New Orleans, La., director Region 12; Frank Pond, Minneapolis, Minn., director Region 7; Tom Jordan, Buffalo, N.Y., director Region 10; Jack Tupper, Seattle, Wash., director Region 11; Thom Muir, Cleveland, Ohio, executive vice president of ARW; John Sheperdson, Worcester, Mass., director Region 1; and Irv Fajans, New York City, director Region 2.

toward a better understanding of mutual problems.

A. A. Sommer, ARW's legal counsel, presented a report on ARW's approach to the "O.E.M. for Resale Problem." He said a planned program has been started in conjunction with ARI so the manufacturers group may see the problem as it faces ARW and in turn advise its own membership.

E. S. Diggle, membership committee chairman, reported four new wholesale members had been elected to ARW, plus one new associate member. Four new wholesale members were admitted:

- Aireco Supply, Inc., Washington, D.C.
- Davidson Supply Co., San Francisco, Calif.
- B & W Supply Co., Portland, Ore.
- Refrigeration Suppliers, El Paso, Texas.

Lester Laboratories of Atlanta, Ga., is the new associate member. "ARW now represents 491 wholesalers," Diggle reported.

Elected to serve with Sorenson are E. H. Davey, Davey Sales Co., Akron, Ohio, vice president; Paul Bodwell, Bodwell Co., Harrisburg, Pa., secretary; and Diggle, Henry V. Dick & Co., Columbia, S.C., treasurer.

## DO-IT-YOURSELF DISPLAY



**THIS COUNTER DISPLAY** and live-action demonstrator is helping Pyramid Instrument Corp. introduce its new cable tracer. By using the display, a serviceman can demonstrate for himself how the new instrument can trace up to 10 conductors or pairs at once without need for buzzers, bells, or a helper. Display consists of a 3-dimensional metal panel and sturdy composition board that simulates outward boxes; a switch panel, and an actual wiring harness.

## Management courses set for wholesale executives

Three U.S. universities are offering management courses for wholesaler executives this year, sponsored by National Association of Wholesalers (NAW). The general outline of study is identical at each college.

Schools are Ohio State University College of Commerce and Administration, June 11-17; Wharton School of Finance and Commerce of University of Pennsylvania, June 11-17; and Graduate School of Business, Stanford University, Sept. 10-16.

Paul L. Courtney, NAW executive vice president, expects 175 executives to attend these courses, now in their tenth year. Curriculum includes personnel relations and training; financial management; controlling wholesale operating costs; budgeting a wholesale operation; insurance for wholesalers; and customer and supplier relations.

Additional information may be obtained by writing NAW, 1001 Connecticut Ave., N.W., Washington 6, D.C.

# BOHN LO-AIRE ↓ ↓ ↓ COOLERS CHOSEN FOR MEAT DEPARTMENT OF EISNER STORE



Eisner Stores, Division of Jewel Tea Company, Inc., selected Bohn Lo-Aire Unit Coolers for this recently remodeled supermarket in downtown Champaign, Illinois. These economical, low air-flow refrigeration units now provide Eisner's meat-wrapping areas and cutting room with even temperatures, low enough to prevent weight loss and spoilage but high enough to insure acceptable working conditions. Eisner personnel especially appreciate the comfort resulting from the low air volume, very low air discharge velocity, and quiet operation of these units.

Bohn Lo-Aire Unit Coolers for temperature ranges above 34° are available in seven models from 4,000 to 26,600 BTU/HR at 10° T.D. For storage temperatures ranging from 28° to 34°, all seven models of the Lo-Aire are available with the Bohn-El automatic electric defrost system. For complete details, write for Bulletin 260 or call your Bohn Wholesaler.

# BOHN

Buy the known line... the **BOHN** line  
ALUMINUM & BRASS CORPORATION  
Danville Division • Danville, Illinois

# Contractor-Dealer ACTIVITIES

## McCarty names chairmen for 7 RACCA committees

President Walter McCarty made seven committee head appointments at the second quarterly board of directors meeting of Refrigeration and Air Conditioning Contractors Association in Chicago, Ill., in February.

Because 12 RACCA-National directors from throughout the nation were there, the board was able to resolve many questions.

Committee chairmen named were Al Hanson, Los Angeles, Calif., advisory and 16th annual convention committees; A. M. Palen, Minneapolis, Minn., constitution and by-laws; R. S. Lafferty, Miami, Fla. finance and budget; Harvey O. Miller, Chicago, joint activity and labor; Daniel M. Brown, Chicago, manufacturer and wholesaler relations; Warren W. Farr, Cleveland, Ohio, membership.

Under Farr's direction, the association is starting a strong drive for new members throughout the country.

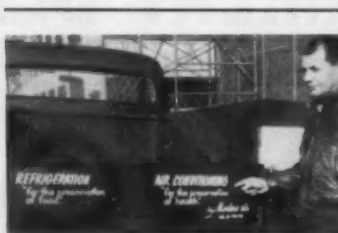
## Chicago RACCA re-elects Daniel Brown president

All three officers of Refrigeration and Air Conditioning Contractors Association of Chicago, Ill., were re-elected at the group's February meeting. Daniel M. Brown, vice president of Systems Engineering Corp., was chosen for a second term as president.

Also re-elected were Harvey O. Miller, president of Murphy & Miller, Inc., vice president, and Oliver P. Crose, president of Crose Co., secretary-treasurer.

Named directors were John A. Annis, president of John A. Annis, Inc.; Albert M. Belanger, president of Chicago Climate Control Co.; David A. Forberg, president of Air Comfort Service, Inc.; Edmund Gelfand, president of Crown Temperature Engineers, Inc.

Lawrence E. Hermen, president of All-Temp, Inc.; Herman Stein-



**INDUSTRY SLOGANS?** Long Island contractor Joseph Galletta of Air Modern Inc. offers the two phrases shown above to the refrigeration and airconditioning industry as possible slogans. Galletta feels manufacturers, trade associations, trade publications, contractors, and wholesalers should get behind a drive to adopt a slogan.

born, president of Lake Shore Refrigeration Sales & Service; Louis H. Streb, partner in Chicago Conditionaire Co.; and Albert G. Weil, president of RMC, Inc.

Another feature of the meeting was a panel discussion on licensing of contractors.

## 4 Carrier distributors get larger territories

Sales territories for four distributors for Carrier Air Conditioning Co. have been enlarged.

Prentiss Corp., Los Angeles, Calif., adds four counties, more than doubling its trading area. Counties are San Bernardino, Inyo, Riverside, and Imperial, giving the distributor nine counties in southern California.

Power Engineering Corp., Wilkes-Barre, Pa., adds 18 counties in three states. Territory now covers 46 counties between Pendleton County, W. Va., and Ithaca, N.Y.

Peirce-Phelps, Inc., Philadelphia, Pa., adds 18 counties in south and central New Jersey plus the Harrisburg area. Originally, Peirce-Phelps covered only southeastern Pennsylvania and Delaware.

Wilson Electric Co., Rockford, Ill., adds 39 counties to its territory. Wilson's area now includes 52 counties in Illinois, Iowa, Wis-

consin, and Missouri. Branch offices have been opened in Peoria, Ill., and Davenport, Iowa, to serve the new territory.

## Annual NCRSA meeting set for Las Vegas

National Commercial Refrigerator Sales Association members overwhelmingly voted for Las Vegas, Nev., as the site of their 1961 convention.

The group's 15th annual convention has been scheduled for The Riviera Hotel, Oct. 8-11.

## Seven join NCRSA

New members of National Commercial Refrigerator Sales Association include:

Allied Distributing Co., Inc., Joplin, Mo.

F. C. Cantrell Refrigeration, Inc., Dallas, Texas.

Fager Commercial Refrigeration Co., Dayton, Ohio.

McDonnell's Equipment Co., Van Nuys, Calif.

Market Engineering Co., Inc., Albuquerque, N.M.

Nor-Tex Store Engineering, Inc., Dallas, Texas.

Standard Agencies, Ltd., Montreal, Quebec, Canada (re-joined).

## Duckett Distributing meets with 70 dealers

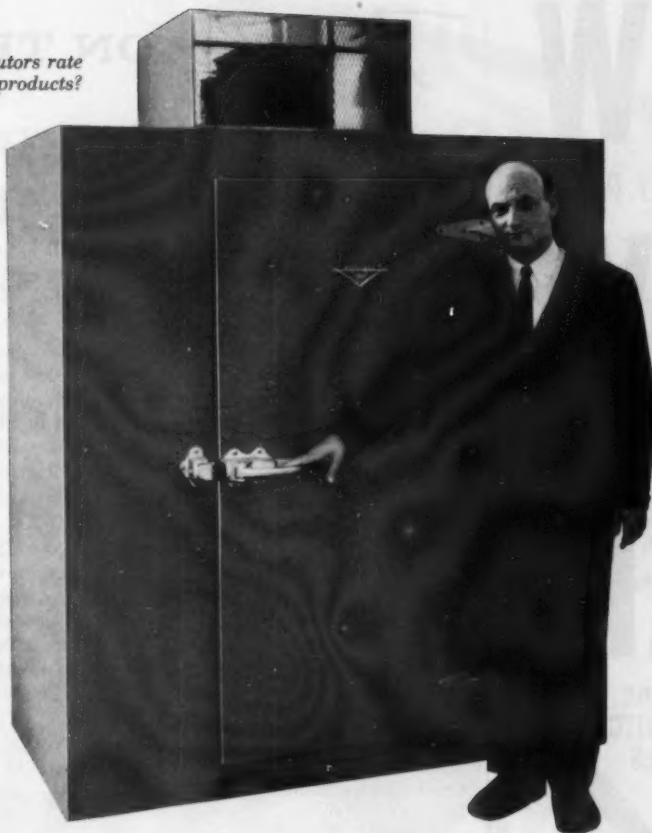
A "get acquainted" party helped Duckett Distributing Corp. explain its organization policies and 1961 sales aims to 70 dealers earlier this year in Waltham, Mass.

Duckett serves Carrier Air Conditioning Co. dealers in eastern Massachusetts and Rhode Island. A. A. Duckett was a former Camden, N.J., distributor.

General manager Joseph Grenader explained Duckett's dealer policies on warehousing, financing, service parts, engineering, training, advertising, and promotion.



how do distributors rate  
NOR-LAKE refrigeration products?



## "Nor-Lake means more sales!"

...says Dave Friedman, of Paramount Fountain & Restaurant Supply Corp., Providence, R.I.\*

"Our experience indicates that NOR-LAKE equipment gives dealers a number of sales advantages. In our highly competitive markets where ruggedness, dependability and long life are so important, NOR-LAKE features add up to increased opportunities for increased profits.

"First, NOR-LAKE has a full line of quality equipment with 'Fine-Line' appearance. This wide range of attractive refrigeration products allows us to effectively compete and bid on a diverse number of applications.

"We've discovered that NOR-LAKE's years of experience are our best assurance of customer satisfaction and increased future acceptance of our sales efforts. Finally, with NOR-LAKE it's possible to add extra profit dollars to our account through savings in sales time or trouble and service calls.

"To put it simply, NOR-LAKE means more sales because NOR-LAKE has more to offer."

\*Paramount Corporation is one of the largest suppliers of equipment for restaurant and hotel chains and institutions on the East Coast.

### NOR-LAKE'S "FINE-LINE" IS A FULL LINE

- freezers
- ice cube makers
- refrigerators
- bottle coolers
- walk-ins
- direct draws
- biological refrigerators
- freezer-refrigerator combinations

ALL MODELS AVAILABLE IMMEDIATELY,  
IN STAINLESS STEEL IF DESIRED

### NOR-LAKE, Inc.

Second & Elm, Hudson, Wisconsin, Dept. 206



Write today for information about NOR-LAKE sales opportunities in your area.

Please rush FREE illustrated information on ☐ Freezers  
☐ Refrigerators ☐ Walk-in Coolers

Other \_\_\_\_\_

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CITY \_\_\_\_\_ STATE \_\_\_\_\_

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# NOW competitively priced! NEW **Aeromaster** INDUSTRIAL COOLING FAN



Performance, construction, and price make this the "best buy" in industrial fans! Delivers more CFM with less H.P. Features a ductile iron hub, removable blade retention caps, heat treated aluminum alloy blades with constant chord width and flanged ends. 4, 6 and 8 bladed fans available in 54" to 120" diameters. Maximum tip speed is 15,000 ft./min. Easy to install . . . easy to maintain. For complete details, write: KOPPERS COMPANY, INC., 5004 Scott Street, Baltimore 3, Md.



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Fans**

Engineered Products Sold with Service  
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## *People* ON THE MOVE

York Div., Borg-Warner Corp. promotes **E. R. Pierce** from manager of contractors to general manager, packaged product branches. New branch managers under Pierce are **Ralph W. Phillips**, St. Louis, Mo., packaged products wholesale branch, and **Warren D. McKelvey**, contractors branch in Long Island City, N.Y.

**P. J. Margherio** is appointed mid-western regional manager for Albion Div., McGraw-Edison Co. His headquarters is St. Louis, Mo.

**Sydney Anderson** is named vice president in charge of west coast operations for Typhoon Air Conditioning Div., Hupp Corp. He will supervise operations in California, Arizona, and Nevada from the firm's factory branch in Los Angeles.

**Goulds Pumps, Inc.** promotes **S. A. Bunis** from assistant sales manager to sales manager.

Six new regional sales managers are added at Scotsman, Queen Products Div. of King-Seeley Corp. They are **E. F. Kozel**, Minneapolis, Minn., region; **R. W. Addington**, Dallas, Texas; **L. D. Holman**, Pittsburgh, Pa.; **W. D. Worthy**, Clearwater, Fla.; **J. W. Ward**, Atlanta, Ga.; and **H. L. St Aubin**, Louisville, Ky.

**Edward N. Harris** is elected vice president of sales of Bohn Aluminum & Brass Corp.

**Robert S. Todd** is appointed marketing manager, commercial controls for Spencer Products group, Metals & Controls Inc., a division of Texas Instruments Inc. He was district manager in Spen-

cer's midwest region. Todd replaces **Robert M. Glidden** who is now staff assistant to G. Gilbert Wood, manager of Metal & Controls' Versailles, Ky. plant.

New sales manager of National Copper and Smelting Co. is **Richard B. Flynn**. He's been Cleveland, Ohio, district sales manager for Wolverine Tube for three years.

New director of advertising and sales promotion for Chrysler Corp.'s Airtemp Div. is **Les Epley**. He's been sales promotion manager and advertising manager during his 20 years with the division.

Three new directors elected to board of Copeland Refrigeration Corp. are **Rudolf G. Berg**, vice president, sales; **Benjamin W. Moreland**, vice president, manufacturing; and **Frank J. Gleason, Jr.**, treasurer.

**B. A. Stahl** becomes district manager of Houston, Texas, office for Vilter Mfg. Co.

**Loren Brower** is appointed regional manager for Michigan by Ross-Temp, Inc., with headquarters in Kalamazoo.

**Lawrence C. Felder** is appointed sales manager, air conditioning division, Remington Corp. He was formerly president of Virginia Metal Products.

**Walter R. Clarke** is appointed to newly-created position of product manager in the marketing division of Square D Co. He's been manager, systems planning for firm's industrial controller division.

*Continued on page 102*

# THE JEWEL OF ALL WATER TREATMENTS. . .



The newest and finest water treatment. A price-less maintenance aid in your air-conditioning and water systems. Protects equipment from corrosive attack and prevents further scale formation. Automatic dosage regulation!

To get this beautiful, blue-barrelled, automatic pencil free, with a large, sparkling, simulated diamond in the cap, simply fill in and mail the coupon. Request honored only when name of Company is given. Offer subject to supply on hand. Act now.



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**MORE THAN A HALF-CENTURY OF  
EXPERIENCE THE WORLD OVER**

## USE THIS COUPON

THE PEROLIN COMPANY, INC.

Empire State Bldg., New York 1, N.Y. or 1112 West 37th Street, Chicago 9, Illinois

Gentlemen: Please instruct the nearby Perolin representative to call and tell me what Formet #321 'Diamond Blue' Crystals—the famous TWO purpose Crystal—can do for me.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

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# dependable **TWO POLE** switching



**Ranco Double Pole, Single Throw "O" Type Commercial Controls**, designed for a variety of two pole switching jobs, provide additional general and special applications in commercial air conditioning and refrigeration.

Single and dual unit types in series 6000 and 7000 provide a double break for single-phase operation, simultaneous switching of two circuits, or switching two lines of a three-phase circuit.

Features generally duplicate those on single pole series for low-pressure, high-pressure, dual-pressure and dual-temperature operation. Variations include fixed and adjustable differentials, operation on rise or drop in pressure or temperature, with or without manual reset, cut-out and cut-in ranges, safety limit stop on high pressure range. Available from your local wholesaler.

## 3 Types in Each Series

**TYPE 020**—Single unit in low pressure or temperature. Contacts open on decrease. Automatic or manual reset. Manual start and on-off lever (on temperature).

**TYPE 021**—Single unit in high pressure or temperature. Contacts open on increase. Automatic on both, manual reset on pressure.

**TYPE 022**—Dual unit in combinations of high pressure with low pressure, or with temperature. Contacts open on increase of high pressure, decrease of low pressure or temperature. Automatic on all or manual reset on high and low pressure combination. Safety limit stop on high pressure.



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## *Service Clinic* FOR CONTRACTORS

A MONTHLY TRAINING GUIDE AND REFERENCE FILE FOR YOUR SERVICE DEPARTMENT

# How to install and maintain COOLING TOWERS WATER-COOLED CONDENSERS

### MR. CONTRACTOR:

Watch for the Service Clinic every month. The buff-colored pages will make it easy to find. Pull out the complete section and pass it on to your installation and service department. The material in this section is especially selected, written, and edited to help these men do a better job.

ROBERT WOLFE, *engineer, Halstead & Mitchell*

WHEN YOU INSTALL cooling towers and water-cooled condensers you expect them to operate with a high degree of efficiency. And if you install them properly they will.

But to keep them operating that way throughout their normal life span requires proper maintenance. This care is quite simple, so there is little excuse for not following through.

Here are some practical pointers on both installation and maintenance of these two products that form an integral part of so many refrigeration and air-conditioning jobs.

If you want them to work right, be sure to put them in right. Proper installation is the first step in keeping operating troubles at a minimum. A little extra care at this point will save much service time and trouble later.

Like any equipment which is constantly exposed to recirculating water, cooling towers and water-cooled condensers must be protected against corrosion, fungi, minerals, and chemicals which clog the system and attack both wood and metal. Without proper bleed or blowdown, a concentration of salts occurs. The remaining water increases in hardness and prematurely limes condensers. Concentration of solids

*Continued on page 72*

## SERVICE CLINIC

and acid in the closed water system also will cause trouble.

When using cooling towers, always select the proper valves. Avoid globe valves, because the high pressure drop through the valve is most undesirable. Use gate valves to control flow.

To avoid clogging of condensers and other problems, always make provision for bleed. Take this off at the head of the pump by means of a small  $\frac{1}{8}$ " line and adjusting valve. Bleed should amount to about 0.25% of total water circulated.

Also be sure to adequately size lines to and from the cooling towers so that they will carry the necessary flow of water with minimum pressure drop. Follow the pump manufacturer's instructions carefully on line sizing. If you oversize, you will waste money; if you undersize, you will drastically affect the efficiency and operating life of the equipment.

### **Install it right; connect it right**

If the tower has a belted drive between motor and fan shaft, take care to properly adjust belt tension. Excessive tension will create over-loading conditions and cause motor and bearing failure. Tension is correct when belts can be twisted just  $\frac{1}{4}$ -turn and no more.

If the motor is located outside the tower it should be weather-proof and splash-proof.

If the tower has a distributing pan to eliminate the extra pumping head required on spray type towers (Fig. 1), check to be sure that the tower is level. If it is not, the improper water distribution in the pan will cause a loss of capacity.

There are several ways to connect cooling towers and water-cooled condensers (Figs. 2 & 3). Some of these involve a simple straight-line handling of the water through the condensers and towers. On other jobs it is advantageous to split the condenser circuit, connecting the motor-compressor in series with it. On still other installations it makes sense to split the water circuits for both the condensers and the motor-compressor, even though both units remain in series.

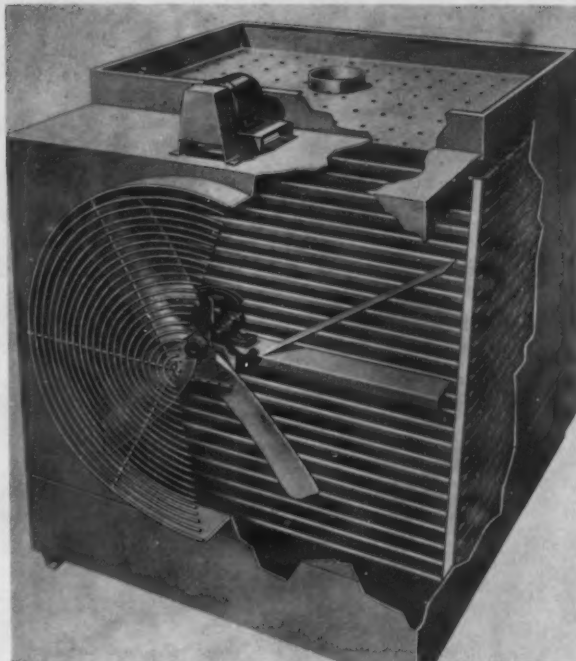
Install cooling towers in the direction of prevailing summer winds (Fig. 4). This will prevent recirculation of warm, moist air from the discharge to the inlet side. You can get records of wind direction and wet bulb temperatures from your local Weather Bureau.

If a cooling tower is to be operated year-round in a cold climate, an indoor water storage tank must be provided (Fig. 5) to prevent freezeup.

When setting up a new cooling tower, drain and refill system water after the first few days of operation. This flushes out the unit, piping and condenser.

Clean and check a cooling tower once or twice a year, depending on locality. Maintenance is simple, but it should be performed on a regular schedule.

Oil or grease fan motors as directed by the manufacturer. Check and grease bearings at the same time, unless they are permanently lubricated. Inspect belts, and if necessary adjust to proper tension.



**FIG. 1**—Cutaway view of cooling tower shows distributing pan at top. If tower is not level, improper water distribution will substantially reduce its capacity.

Inspect complete tower casing for rust. Although every manufacturer of a steel-casing cooling tower provides some protection for the steel, scratches frequently occur in installation or in use. Clean up and repair any rust spots.

Check the wetted deck once a year for deposits of salts left by evaporation of water. Usually this occurs only around inlet air. It becomes objectionable only when it appreciably increases resistance to air flow.

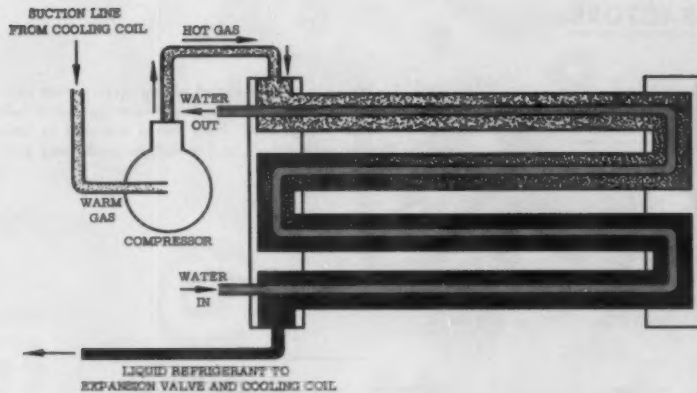
### **Suit water treatment to the need**

Clean and flush the tower sump once a year, or more often if the tower is located in or near dirty air. A hose connection in the inlet make-up water line is very helpful for this purpose.

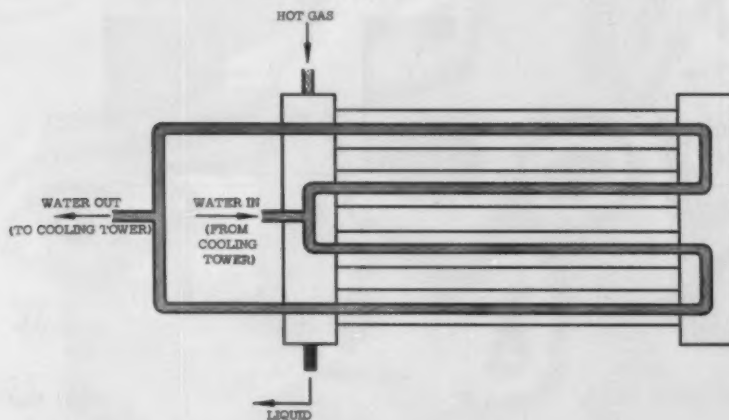
The need for treatment of tower water will vary with locality, but proper treatment will make equipment work better and last longer. It will markedly reduce liming of condensers and tower rusting. Most manufacturers of cooling towers and water-cooled condensers will provide instructions for chemical treatment.

If top condenser coils are cool with the unit in operation, there are two possible causes. One is refrigerant undercharge. The other is an inefficient refrigerant compressor. A refrigerant undercharge usually indicates a leak. Proper servicing involves repairing

*Continued on page 74*



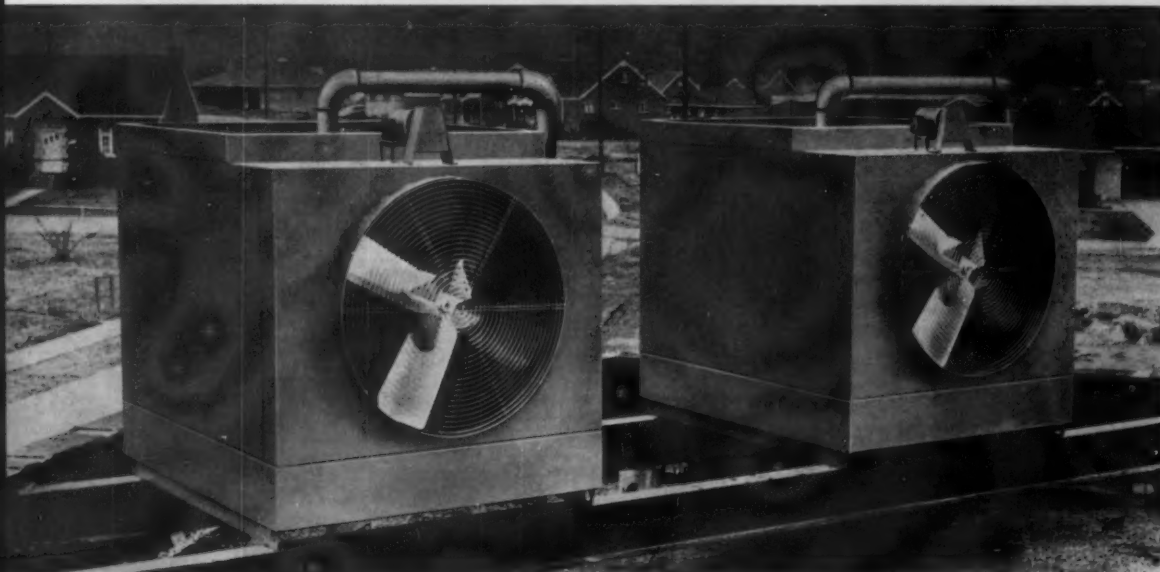
**FIG. 2**—This typical piping hookup for a water-cooled condenser circuit employs true counterflow of refrigerant and water.



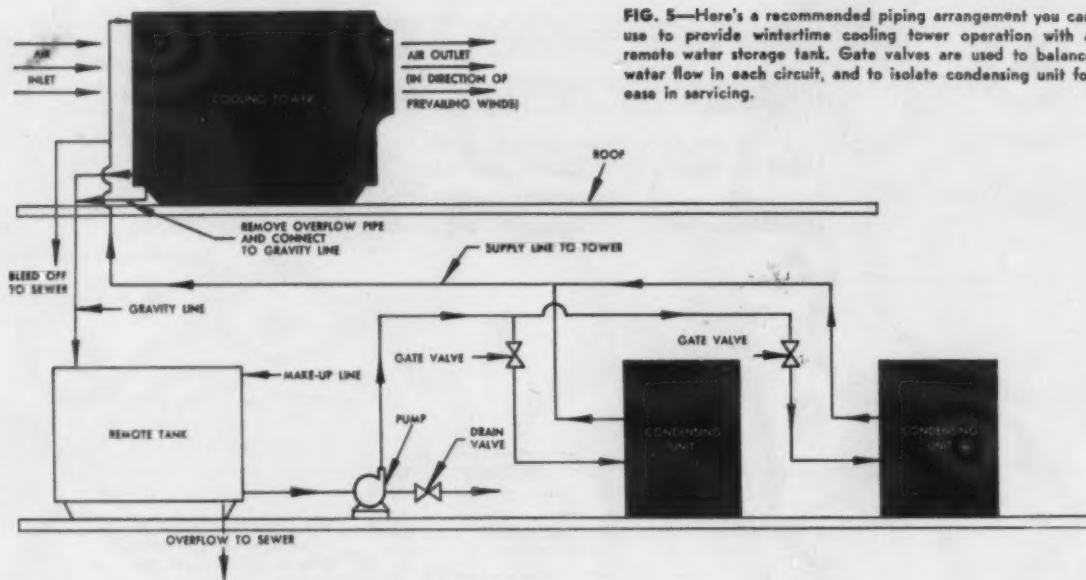
**FIG. 3**—This split-circuit piping arrangement handles cooling tower water flow without excessive pressure drop.

**FIG. 4**—Always install cooling towers so that they face in the direction of prevailing winds. This keeps them from short-cycling warm,

moist discharge air to the inlet side. If necessary, you can mount them on I-beams running across the corners of buildings.



## SERVICE CLINIC FOR CONTRACTORS



**FIG. 5**—Here's a recommended piping arrangement you can use to provide wintertime cooling tower operation with a remote water storage tank. Gate valves are used to balance water flow in each circuit, and to isolate condensing unit for ease in servicing.

the leak and recharging the system. If the compressor is operating inefficiently, simple adjustments will usually bring it back to rated capacity.

Checking the capacity of a water-cooled condenser is quite simple. Measure the flow of water which passes through the condenser in one minute, then weigh it. Subtract the temperature of the water entering the system from the temperature of the water leaving. Multiply the difference by the number of pounds weighed. Then multiply this result by 60 to give the capacity per hour. There are 8.33 pounds in a gallon, so conversion is easy.

Compare your final answer with the rated capacity provided by the manufacturer. They should be within 10% of each other.

Mechanically cleanable condensers are particularly well suited for cooling units in localities which have

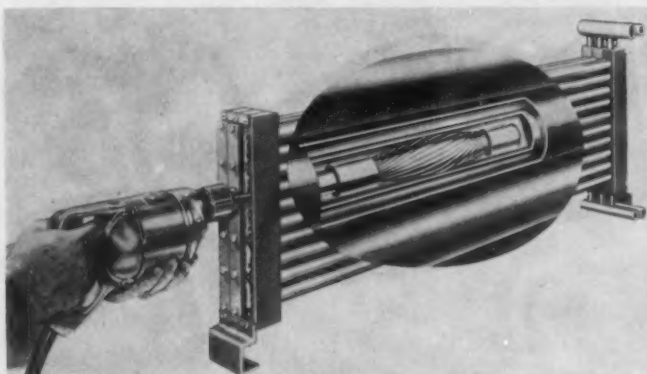
water with a high mineral content. End plates of cleanable water-cooled condensers are easily removable, providing access to water tubes on both ends.

Use a simple cleaning tool, mounted on an ordinary electric drill, to remove the corrosive material that has accumulated on the water tube interiors (Fig. 6). This tool is designed so that it will not damage the copper tubing. You can get it for use with a wide selection of condenser tube sizes.

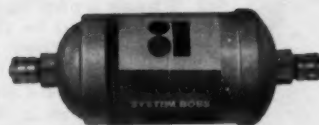
Use the same chemicals for cleaning condensers that you use for cleaning cooling towers. Follow the manufacturer's instructions carefully, to prevent damage to the copper tubing by acid action.

Follow these simple instructions for installing and maintaining cooling towers and water-cooled condensers, and you're sure to have better installations and happier customers. ♦

**FIG. 6** — This cleaning tool for mechanically cleanable water-cooled condensers is mounted on a standard hand drill. It is designed to work through each length of copper tubing without damage to the tube walls.







There are 20 different brands of in-line refrigeration driers on the market today. ANSUL is introducing No. 21. We're entering this crowded and highly competitive field for just one reason: the new ANSUL "System Boss" drier will do a better drying job at a lower cost than any of the others.

The "System Boss" makes it possible for you to use a smaller-sized—and consequently less expensive—drier than many of those you've used in the past. It's possible because improved flow characteristics reduce pressure drop . . . because of a better filter arrangement . . . because of a superior desiccant. The "System Boss" is available in all popular sizes from better refrigeration wholesalers everywhere.

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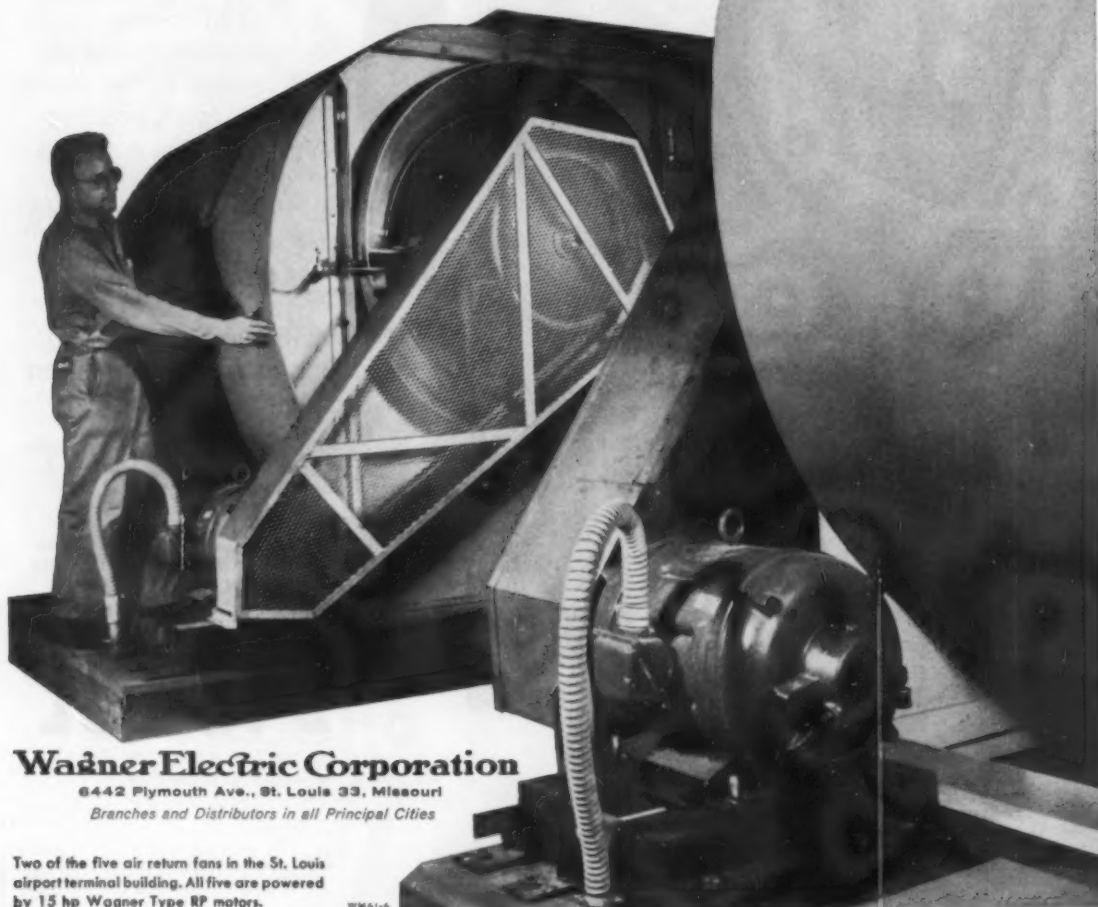
## **power to ventilate an air terminal**

**Quiet Wagner<sup>®</sup> polyphase motors drive air moving equipment at St. Louis' jet age airport**

Keeping any building warm in winter and cool in summer is a demanding job. It's a demanding, king-size job in the 50,000 square foot Municipal Airport terminal in St. Louis.

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WM61-6

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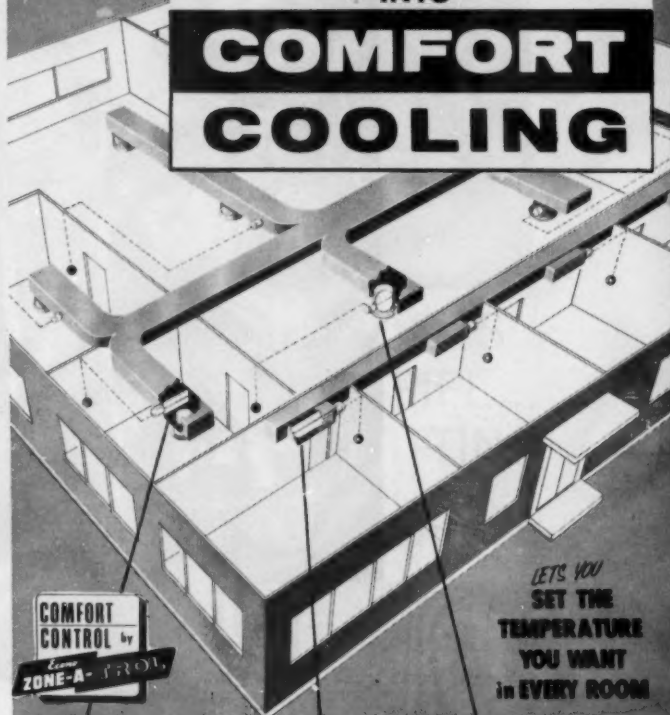
PUTS THE

**COMFORT**

INTO

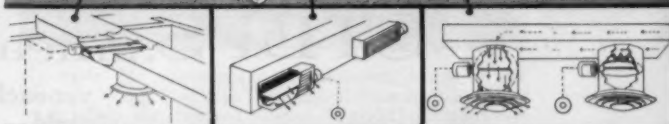
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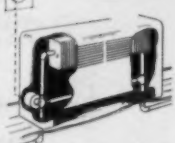
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Automatically Control The Flow Of Air to Each Room



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**National Society for Crippled Children and Adults**

**2023 W. Ogden Ave., Chicago 12, Ill.**



# USEFUL Literature

Continued from page 24

**UNDER THE INFLUENCE**, not of alcohol, but of radio are certain users of radio equipment says General Electric Co.'s guide ECR-568A. The 16-page, pocket-size publication informs potential mobile communications users of some of the more important Federal Communications Commission requirements. It also discusses operational methods, such as how a message is sent, how to adjust a mobile radio, and record-keeping.

circle 215 on reader service card

**JUST THE FACTS, SIR**, is a paraphrase of the sub-title of Bulletin AS-101, published by Davidson Fan Co. on "Why Place an Exhaust Fan Motor in the Air Stream?" The bulletin then lists the facts as to why this should be done and adds two drawings, a cutaway photo, and several features of one model of a company fan.

circle 216 on reader service card

**GAS AIRCONDITIONING** is one of the "miracles" of today's science, says Form 07P-2 of Arkla Air Conditioning Corp. The release contains information on how gas is used in single, direct-fired and remote systems and for evaporative coolers and accessories. Dimensional drawings, performance data, and specs are also here on Model 500C.

circle 217 on reader service card

**"NEW! NEW! NEW!"** is the headline of a publicity sheet issued by Garman Co. on its liquid scale remover and on its leak detector. It has photos of each product as well as per bottle and per drum prices. Also offers brief paragraphs on the products' advantages and uses.

circle 218 on reader service card

**"PROFILE"** is the title of a new brochure on the facilities, products, and markets of Industrial Div., American-Standard. The bulletin (B-6429) briefly describes the division and discusses application of its equipment for various buildings. The division's line of equipment and a listing of companies who use Amstan equipment are also given, with illustrations.

circle 219 on reader service card

**HOW TO CUT** corrosion loss in cooling systems which, in turn, cuts operating costs, is the subject of papers released by Berna Corp. The answer is "Sarine" corrosion inhibitor and "Dri-freeze" reaction dehydrators. Both sheets list the advantages, specs, and costs of the products.

circle 220 on reader service card

**A NEW BULLETIN**, Form 5026, on the Dunham-Bush, Inc., heat cycle defrost system has been issued. It contains a wiring diagram, two piping schematic diagrams, a dimension diagram, and specs on the evaporator and system and evaporator connections. Two product photos are also included.

circle 221 on reader service card

**TO HELP ICE SKATERS** enjoy their sport more fully, and to help ice rink designers and builders, Committee of Steel Pipe Producers has issued a booklet titled "Steel Pipe in Ice Skating Rinks." It contains a brief history of the sport and the reasons for its growing popularity, what the boom means to the builder, information for the installer, and the advantages of steel pipe in ice rink construction.

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**1 INSULATION FITS  
EVERY SIZE PIPE...  
ANY TYPE FITTING**  
**Mortell NoDrip TAPE**



No tools. No vapor-seals, no fasteners, brads or adhesives. Wrap NoDrip Tape spirally around any size pipe, joints, tees, valves, angles... and the job's done! NoDrip Tape is a pliable, cork-filled, self-adhering product. Forms a permanent air-tight, 100% vapor- and moisture-proof jacket. Stops condensation drip, sweating, frost. Ends rust and corrosion.



## MORTELL NoDrip PLASTIC COATING

... For big areas, large pipes, tanks, air ducts. Another fine Mortell refrigeration product. Applies with brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces. Permanently stops condensation, rust, corrosion.

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Your Key To  
Better Refrigeration

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2001 Webster Avenue, New York 28, N.Y.

## Product DATA

Continued from page 34

drive fans, vertical air discharge. In four models with motor hp from  $\frac{1}{2}$  to  $\frac{3}{4}$  and Btuh capacities at evaporator from 7917 to 257,613 at condensing temperatures up to 120 F and -20 to 40 degree suction. Nominal ratings based on R-22 at 20 t.d. Lengths and widths at top of unit from 26 $\frac{1}{2}$  to 67 $\frac{1}{2}$ ."

circle 150 on reader service card

### Automatic ventilator

**Product:** Ventilator which opens and closes automatically with variations in temperature.

**Manufacturer:** Thermvent Corp., Detroit, Mich.

**Features:** Is equipped with movable louvers and is controlled by factory-set thermostat. Louvers shut tight at 50 F and move gradually to fully-open position when thermometer rises to 70 F. Seven models include foundation, gable, soffit, and roof louver types, and available with mesh insect screen and fusible link which melts in case of fire. This closes louvers and stops air circulation until fire out.

circle 151 on reader service card

### Centrifugal compressor

**Product:** Series T "Turbomaster" centrifugal compressor.

**Manufacturer:** York Div., Borg-Warner Corp., York, Pa.

**Features:** Rated from six to 600 tons, depending on refrigerant and temperature levels. For use with R-11, R-114, R-12, R-22. Can be direct-driven by electric motor, steam turbine, gas tur-



bine, or gas engine and operates in 800 to 7000 cfm range.

circle 152 on reader service card

### Ultrasonic cleaner

**Product:** "diSONtegrator System Thirty" ultrasonic cleaner.

**Manufacturer:** Ultrasonic Industries, Inc., Plainview, L.I., N.Y.

**Features:** Has broad band frequency modulated circuit, generator fused for

Continued on page 82



Specify AIRSERCO PRODUCTS and get "THE STANDARD OF THE INDUSTRY" in . . .

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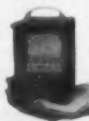


"AIRSERCO . . . creative leader of the industry since 1933."

**AIRSERCO** has the  
**BROADEST LINE**  
of Instruments, Equipment, and Vacuum Pumps  
in the Air Conditioning,  
and Refrigeration industry.



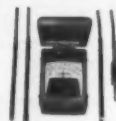
Portable Charging Station With High Vacuum Pump



Portable Recording Voltmeter



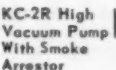
5 lb. Refrigerant Charging Cylinder



Thermo-Meter



Hermetic Unit Cap-Start Cap-Run Test Card

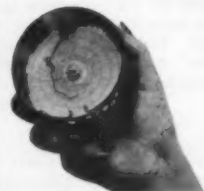


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## He's sweating out an algae problem

No wonder he's sweating—his office air conditioning broke down on the first hot day—and algae and slime were to blame. Right now he is trying to figure out how much the loss of efficiency and lowered output of more than 100 office workers is going to cost him.

Air conditioning systems can have some algae and still perform reasonably well under normal conditions. But when the temperature goes up, algae and slime reduce water flow and heat transfer, causing a shutdown.

Don't let this happen to your customers. Regular treatment with one of the Calgon algacides will keep refrigeration and air conditioning systems free of algae and slime.

You have a choice of two types of algacides. Calgon® Biocide RP is a very potent liquid which has *Reserve Power* for longer lasting protection and is most effective against green algae. Calgon Algacide comes in pellet form and is especially effective against slime bacteria growths.

### If the problem is water ... CALGON HAS THE ANSWER

More than 35 years of experience with water problems of all kinds ... research facilities dedicated to a constant search for better water treatment chemicals and methods of treatment ... analytical service and expert technical advice for every cus-

tomers ... and a full line of products backed by the Calgon name ... all these are at your service. Call on Calgon for help on any water problem.

Ask your refrigeration wholesaler about these quality Calgon products—Calgon Scale Remover, Micromet® Plates, Calgon Algacide and Biocide RP, Banox®, Ice Machine Cleaners and Treatment, Gas Leak Detector. Each one is a leader in its field.

**CALGON COMPANY**  
HAGAN CENTER, PITTSBURGH 30, Pa.



DIVISION OF **HAGAN**  
CHEMICALS & CONTROLS, INC.

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## Product DATA

Continued from page 80

2 amps and rated at 30 watts average power. In seven colors: turquoise, ivory, wheat yellow, soft gray, coral pink, pale green, desert sand. Cleaning begins when tank filled with cleaning solution. Integral with tank is transducer which converts electrical energy from generator into sound waves. When this energy

propagated in cleaning solution, fluid exploded 90,000 times per second into millions of tiny vacuum bubbles which disintegrate particles on object.

circle 153 on reader service card

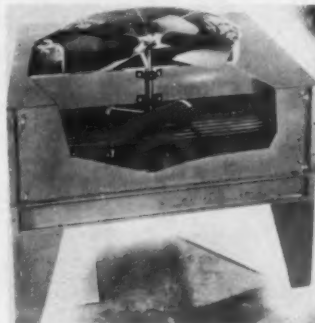
### Remote condensers

**Product:** Remote air-cooled condensers (Models RVD, RHD).

**Manufacturer:** Danville Div., Bohn Aluminum & Brass Corp., Danville, Ill.

**Features:** Offer slow-speed propeller fans; coils with eight fins per inch for low air pressure drop; all-aluminum casing and fins with full collars; zinc-coated, chromate-dipped fan guards and steel

shafts. For use with built-up systems, package units, heat pumps, multiple compressor-condenser hookups. Head pres-



sure control keeps condensers operating properly throughout year, no matter what the weather. Model RVD shown.

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Entire Erecta-Shelf units may be clipped together, end to end or back to back, in combinations to provide use unlimited! Erecta-Shelf is even available on heavy duty silent rubber casters for added flexibility.



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A quality product of METROPOLITAN WIRE GOODS CORP.  
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circle 51 on reader service card

### Plastic envelopes

**Product:** Protective plastic envelopes.

**Manufacturer:** Seton Name Plate Co., Inc., New Haven, Conn.

**Features:** For permanent protection of blueprints, charts, diagrams, job progress forms, etc. Has crystal-clear vinyl window on front and back to allow visibility from both sides, with 3/8" black opaque vinyl plastic frame around four sides. Also has snap closures for easy insertion into open side and metal eyelets for hanging from any position. In three styles for two sheets of paper 8 1/2 x 11" to 17 x 22" back-to-back or one sheet 11 x 17" to 22 x 34" folded.

circle 155 on reader service card

### Gas furnaces

**Product:** Two lines of gas furnaces adaptable to year-round airconditioning (Series 393, 395).

**Manufacturer:** Bryant Mfg. Co., Indianapolis, Ind.

**Features:** Offers direct-drive airconditioning blower, dimpled heat exchanger, split-fire burner. Also features positive safety controls, uni-weld casing. All units up to 125,000 Btu are 46 x 26" with no clearance on sides and back, 6" clearance on front.

circle 156 on reader service card

### Motor starter

**Product:** Manual Class 10 starter for fractional horsepower motors.

**Manufacturer:** Furnas Electric Co., Batavia, Ill.

**Features:** Single- and 2-pole devices include built-in trip-free thermal relay to protect motor from sustained overload and are required to break both lines for direct current applications. Optional is a toggle selector which may be combined with a manual starter and a pressure switch thermostat or other sensing device. Thermal relay contacts cannot be closed until overload has been eliminated and eutectic alloy solidified.

circle 157 on reader service card

Continued on page 84



Spotted leaks other detectors missed . . . result:

## "MY H-6 PAID FOR ITSELF ON ONE JOB" ....

says MR. FRED SKAFF (shown here),  
Skaff Refrigeration Service,  
Lawrence, Massachusetts

"That's right," reports Mr. Fred Skaff, "thanks to General Electric's Type H-6 leak detector I was able to repair ten discarded refrigerators . . . 'leakers' that other, less sensitive detection devices couldn't handle. What's more, I resold these refrigerators at a profit four times greater than H-6 purchase price."

Like many other refrigeration and air-conditioning servicemen, Mr. Skaff has discovered that the H-6's greater sensitivity pays off. This halogen detector consistently spots all troublesome leaks in seconds . . . even those as small as 1/2 ounce per year. So . . . no costly call-backs . . . more calls per day . . . greater profits with the fast, dependable H-6.

Find out now how quickly the H-6 pays for itself. Your local air-conditioning and refrigeration wholesaler will gladly demonstrate the many ways the H-6 can help you improve service and increase profits. Ask him about the new, convenient H-6 finance plan. For the latest H-6 product bulletin simply fill-out and mail the coupon below to Section 598-06, General Electric Co., Schenectady 5, N. Y.

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time and boost profits with a  
G-E Type H-6 Leak Detector...  
clip coupon and mail today.



General Electric Co.  
Section A598-06  
Schenectady 5, N. Y.

Please send by return mail, Bulletin GEA-6827, on "The Type H-6 Leak Detector."

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

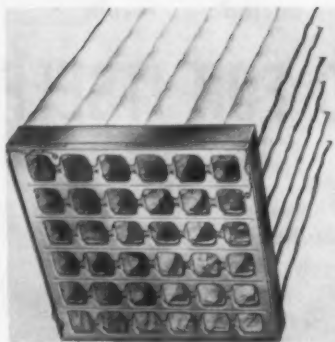
# Product DATA

Continued from page 82

## Dry-type air filter

**Product:** "Dri-Pak" dry-type air filter.  
**Manufacturer:** American Air Filter Co., Inc., Louisville, Ky.

**Features:** Inflates when ventilation system in operation and collapses when system shuts down. Each 24 x 24" disposable cartridge is folded and 4" deep



and weighs four lb. Frame in three arrangements—front access with no pre-filter, front access with pre-filter, rear access with no pre-filter. Filter rated at 2000 cfm and velocity through media only 21 fpm. In three standard sizes—24 x 24 x 36" inflated; 12 x 24 x 36" inflated; 24 x 24 x 18" inflated.

circle 158 on reader service card

## Core drill

**Product:** "Roto-Imp" heavy duty rotary-impact core drill (Model JL-200).

**Manufacturer:** Bill Jack Scientific Instrument Co., Solana Beach, Calif.

**Features:** No setups or water required. Has 1½ hp motor and gear train that rotates at 1200 rpm and delivers 7200 impacts per minute at drill bit tip. Drills holes 1½ to 6" dia. at 1" per minute. Weighs 30 lb., maximum pressure needed 15 to 20 lb., and operates on 115 v. ac or dc.

circle 159 on reader service card

## Insulating plastic foams

**Product:** Rigid urethane foam boards ("Thurane") and blue insulation board (to replace "Styrofoam 33" and "Styrofoam 22").

**Manufacturer:** Dow Chemical Co., Midland, Mich.

**Features:** "Thurane" has high solvent resistance and heat distortion and low thermal conductivity, with permanent K factor of 0.16 to 0.17 at 70 F. Has a

Continued on page 86



**WITT  
Defrostair COILS  
7 MODELS**  
Capacities 13850 to 44100  
B.T.U./HR./10°F.T.D.

## AN ENGINEERING ACHIEVEMENT...

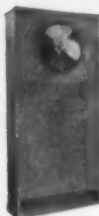
IN SIMPLICITY, EFFICIENCY, LOW COST



**WITT  
Defrostair COILS  
8 MODELS**  
Capacities 2800 to 12100  
B.T.U./HR./10°F.T.D.



**WITT  
Defrostair COILS  
3 MODELS**  
Capacities 1800 to 3020  
B.T.U./HR./10°F.T.D.



**WITT  
Defrostair COILS  
3 MODELS**  
Capacities 1400 to 2200  
B.T.U./HR./10°F.T.D.

Here's the ultimate in flexibility... 4 different shapes... 21 different models. The most complete line of low temperature coils ever offered for temperatures below freezing. Witt Defrostair exclusive patented Heat Trap features means low initial and installation cost. Designed to meet every demand for perfect performance. Requires only a low cost single pole, double throw time clock for complete automatic defrosting. There is a Defrostair electric defrost system to meet all your requirements. Write today for full particulars.

**A. H. WITT COMPANY, INC.** 940 N. Sycamore Ave.,  
Los Angeles 38, Calif.

## WITT LOW TEMP Defrostair

WITH EXCLUSIVE  
PATENTED\*

## Automatic Electric Defrost System

\* PATENT NO.  
2539813-2492970

UNDERWRITERS  
LABORATORIES  
APPROVED



# BEST

FOR ALL  
MAKES  
OF ICE  
MACHINES

## VAPCO

## ICE MACHINE CLEANER

The ORIGINAL LIQUID Ice Machine Cleaner. Works fast yet safely. Produces FRESH SMELLING flakes and cubes.

No danger from toxic residues because it's FOOD GRADE. Simple and safe to use with ANY machine.

1. Goes into solution quickly — even in COLD water.
2. No undissolved crystals left.
3. Removes more scale per ounce of cleaner.
4. Easy to use.

8 fl. oz. bottles and 200 lb. Drums



Complete literature on request or see your dealer TODAY!

**GARMAN COMPANY**  
ST. LOUIS 25, MO.

circle 32 on reader service card

circle 87 on reader service card

Earn more money in 1961 with

# SCOTSMAN

## ICE MACHINES



**You make more money** with Scotsman Ice Machines because you have more machines and more markets to sell!

There are more than 60 machines and accessories in the Scotsman line—a wide range of models to fit the largest hospital or the smallest corner drive-in. This helps you make more money—you get big sales, medium sales and pick up a lot of smaller sales as well!

You have a liberal profit arrangement too that makes it worthwhile to sell every unit in the Scotsman line. And you are free from excessive service and installation worries. Scotsman machines are dependable.

**And remember this:** Scotsman helps pre-sell the Scotsman line with a dominant advertising and promotion campaign that continues all year long! You'll find Scotsman a familiar and respected name in more than two dozen markets! This means faster sales and bigger volume for you.

Don't miss this chance to see if you qualify for a valuable Scotsman franchise. Check on this opportunity today by sending in the coupon.



● Send me complete information about a dealer franchise for Scotsman Ice Machines

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

MAIL TO: SCOTSMAN ICE MACHINES  
Queen Products Division of King-Seely Thermos Co.  
194 Front Street, Albert Lea, Minnesota



circle 73 on reader service card

circle 31 on reader service card

**STOP NOISY JITTERS**

*Control*  
**VIBRATION and NOISE**  
in Your REFRIGERATION and  
AIR CONDITIONING INSTALLATIONS



NEW  
LOW  
COST

**FABCEL**

NEOPRENE *Pads*  
Patent Applied For

**AFFORD MAXIMUM STABILITY**  
*Easily Installed*

Just cut to shape and size from standard 18" x 18" FABCEL sheets. Slip into place and check the difference.

*Write for new catalog*

**FABREEKA PRODUCTS CO., INC.**  
1190 R Adams Street  
Boston 24, Mass.

Representatives in Principal Cities  
In Canada: International Equipment Co., Ltd.,  
Montreal, P.Q.

## Product DATA

Continued from page 84

unicellular structure and for low temperature space insulation. Blue insulation board to find major uses in comfort and low temperature insulation applications. Is flame-retardant.

circle 160 on reader service card

### Air diffuser

**Product:** Air diffuser for troffers (Type CLD).

**Manufacturer:** Anemostat Corp. of America, N.Y., N.Y.

**Features:** Coordinates air distribution and illumination in single efficient ceiling unit. Is of aspirating type and discharges the supply air at acceptable sound levels without smudging. For separate installation from that of troffer.

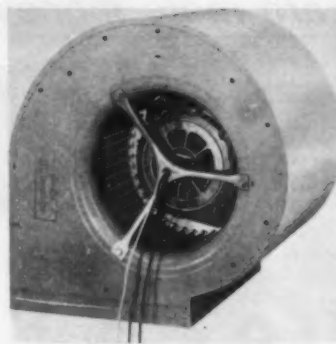
circle 161 on reader service card

### Blower motor

**Product:** Blower motor that reverses usual relationship of rotor and stator.

**Manufacturer:** Electric Motors Div., A. O. Smith Corp., Tipp City, Ohio.

**Features:** Stator of conventional electric motor becomes rotor to which blower



wheel attached. Shaft assembly which has field windings becomes stator. Is of permanent split capacitor and direct-drive type unit. Outer shell of motor spins for maximum efficiency of centrifugal blower action in minimum space.

circle 162 on reader service card

### Gas airconditioner

**Product:** Series D500 "Sun Valley" downflow gas airconditioner.

**Manufacturer:** Arkla Air Conditioning Corp., Little Rock, Ark.

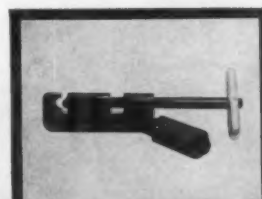
**Features:** Has gas input at full capacity of 80,000 Btuh, delivered Btuh capacity of 42,000 for cooling; gas input at full capacity of 120,000 Btuh, bonnet Btuh capacity of 96,000 for heating.

Continued on page 89

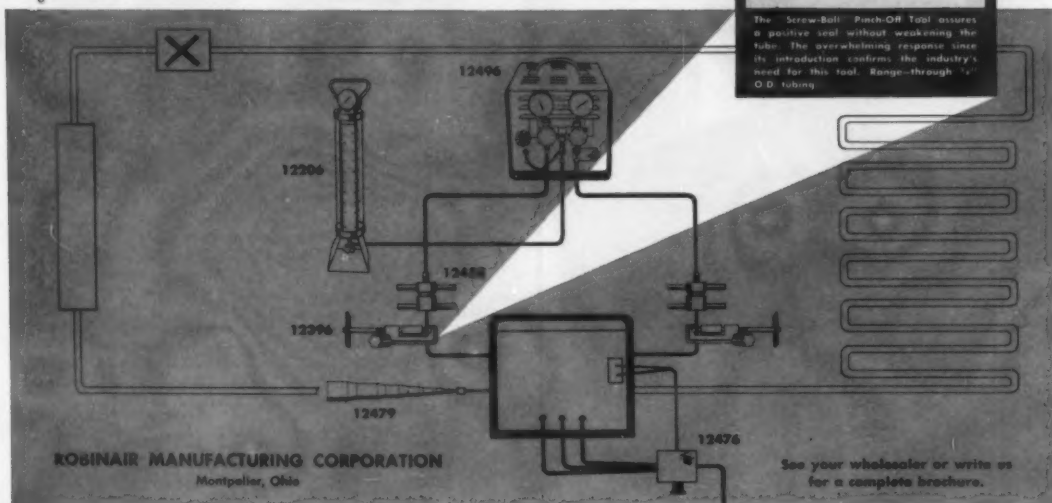
"Robbi"



**factory approved tools  
for exploding component  
change market**



The "Screw-Ball" Punch-Off Tool assures a positive seal without weakening the tube. The overwhelming response since its introduction confirms the industry's need for this tool. Range-through 1/2" O.D. tubing.



**ROBINAIR MANUFACTURING CORPORATION**  
Montpelier, Ohio

See your wholesaler or write us  
for a complete brochure.

circle 71 on reader service card



# Descale cooling towers, evaporative condensers, ice-making machines rapidly, effectively with **dry acid** cleaners based on **Du Pont Sulfamic Acid**



**SAFER, EASIER TO USE.** Dry acid cleaners eliminate hazards of handling liquids, particularly where carboys are involved. These cleaners can be added directly to sump of cooling tower or evaporative condenser . . . dissolve scale fast—destroy algae, too!



**LESS CORROSIVE.** For descaling condenser tubes (above) and other parts, sulfamic cleaners are less corrosive than liquid cleaners . . . on brass, 60% less; on steel, 70%; copper, 85%; aluminum, 95%. Many sulfamic cleaners can be used safely on galvanized steel.



**LOWER HANDLING COSTS.** This 100-lb. drum of dry acid cleaner is more than equivalent to this carboy of inhibited muriatic acid weighing 192 lbs. You'll save on shipping, handling and storage expenses. And no deposits because drums are disposable.



**NON-FUMING.** These dry acid cleaners produce no corrosive gases, either dry or in solution. No harmful fumes to cause corrosion in vapor spaces of equipment or damage to electrical and operating parts . . . and never a toxic fume problem to personnel.

Ask your supplier for safer, effective cleaners based on Du Pont Sulfamic Acid or mail coupon for additional information and names of formulators who offer these compounds.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

THE REFRIGERATION & AIRCONDITIONING BUSINESS/APRIL 1961



E. I. du Pont de Nemours & Co. (Inc.)  
Industrial & Biochemicals Dept., N-2545R  
Wilmington 98, Delaware

Please send me ☐ your "Quick Facts on Dry Cleaners" booklet. ☐ names of formulators offering cleaners based on sulfamic acid.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

circle 27 on reader service card



## Thank you, 74%

Good news! When we surveyed air-conditioning dealers in 21 cities last summer, we found that 74% knew of our Certification program. More important: 6 out of 10 familiar with the program *use it in their selling.*

Thus, in less than two years, air-conditioning dealers have demonstrated their enthusiasm for ARI certification. Many have thought up ingenious ways to sell with the program—and we're delighted.

But we won't rest on our laurels. Dealers kept telling us they'd like a sales piece that would explain the ARI Certification program to their customers, so we designed "How to

Buy Central Air-Conditioning." It tells consumers the whys and hows of air conditioning, outlines the Certification program, suggests why air conditioning should not be bought on the basis of price alone. For a sample copy, write (on your letterhead, please) ARI.



### AIR CONDITIONING AND REFRIGERATION INSTITUTE

Department J-412, 1346 Connecticut Ave., N.W., Washington, D.C.

# Product DATA

Continued from page 86

Maximum air quantity on cooling cycle with bypass open, 1800 cfm; heating cycle cfm varies with desired leaving air temperature. Rated air quantity on cooling cycle is 1400 cfm. Motor is  $\frac{1}{2}$  hp, 115 v., 60 cycle, single phase. Service connections are two gas inlets, water inlet and outlet, and flue pipe.

circle 163 on reader service card

## Air handling accessories

**Product:** Line of accessories for use with floor-mounted and horizontal air handlers with capacities from 880 to 47,500 cfm.

**Manufacturer:** Halstead & Mitchell Co., Pittsburgh, Pa.

**Features:** Accessories include cleanable or throwaway filters; face and bypass dampers and mixing boxes with or without dampers; vertical or horizontal directional discharge; coil face velocities from 400 to 700 fpm; variable pitch sheaves; aluminum or copper fins; spray or steam humidifiers.

circle 164 on reader service card

## Reefer temperature recorder

**Product:** Temperature recorder for use on mobile reefer carriers.

**Manufacturer:** Gauge & Instrument Div., Manning, Maxwell & Moore, Inc., Stratford, Conn.

**Features:** Provides permanent record of compartment temperatures from pick-up through transportation to final delivery. Record made by writing arm



that notes air temperatures in compartment on circular revolving chart that makes one revolution every seven days. Temperature ranges from -40 to 120 F. For outside wall mounting, has 12" stainless steel stem extending into compartment and bi-metal helical coil in stem connected to arm by shaft through frictionless bearings.

circle 165 on reader service card

## Winding transformer

**Product:** Shielded winding transformer for hazardous locations.

**Manufacturer:** Acme Electric Corp., Cuba, N.Y.

**Features:** Provides simple shield between input and output windings to permit grounding. Is a code requirement for Class I, division 1 locations where



hazardous concentrations of flammable gases or vapors exist continuously, intermittently, or periodically under normal conditions, during maintenance, because of leakage, during breakdown, or because

of faulty equipment. Includes ratings from 100 watts to 50 kva, 120 v. input, 120 v. output. In five design styles depending on rating.

circle 166 on reader service card

## Room airconditioner

**Product:** 1961 line of room airconditioners ("Unitaires").

**Manufacturer:** Airtherm Mfg. Co., St. Louis, Mo.

**Features:** Has face and bypass damper control that keeps temperature and air circulation constant. Face and bypass damper, consisting of single damper

Continued on page 90

## WHOLESALE-ERS-DISTRIBUTORS

**NOW ... CARRY CONNOR, THE COMPLETE LINE TERRITORIES AVAILABLE**



**KNO-DRAFT all-aluminum diffusers, grilles, registers ... competitively priced with steel-made lines**



## DOREX Type R Air Purification Panel ... for use with standard dust filters

Connor Engineering Corporation, with more than 40 years experience in the design and development of air distribution equipment, offers a complete line of air diffusers of all types, for all industrial, commercial, and residential applications. Complete and priced to compete! And this comprehensive, long-respected air distribution package is now available in protected territories. As a plus value, Connor also

offers its Dorex Type R Air Purification Panel, a semi-disposable, activated carbon filled unit for use with standard dust filters.

You know that it makes sales sense to sell the complete line of a reliable single supplier. Carry Connor, the complete line. Use the coupon below for further information.

CONNOR

**kno·draft®**  
air diffusers

DANBURY, CONNECTICUT

- ☐ Send me further information on your distributor arrangement and the territories available.
- ☐ Send me descriptive literature on your product lines available to distributors.

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_

circle 22 on reader service card

# Product DATA

Continued from page 89

blade, with manual or automatic controls. Angle fin coil permits straight-through air flow and eliminates dead spots. Units have 1-piece motor-fan assembly. Motors resiliently mounted and tapped winding type. Lightweight aluminum fans dynamically balanced and give minimum load on motor shafts.

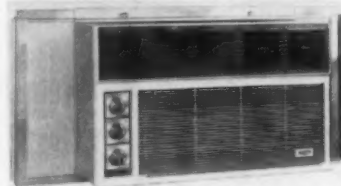
circle 167 on reader service card

## 1961 airconditioner line

**Product:** 1961 line of airconditioners in 19 units and five models.

**Manufacturer:** Whirlpool Corp., St. Joseph, Mich.

**Features:** New models are "Metropolitan," "Super," and "Casement".



"Metropolitan" has 6600 to 9000 Btu capacities, two fan speeds, pull-and-turn air direction louvers. "Super" has 22,000 Btu capacity for basement window, transom, or through-the-wall installation. "Casement" has 8200 Btu capacity, five buttons for two-speed fan, and air condensed as passes through coils. Other models are "Deluxe" (heat pump and through-the-wall, 8500 to 14,500 Btu) and "Custom" (7000 to 16,500 Btu capacities). "Metropolitan" shown.

circle 168 on reader service card

## Ice flaker

**Product:** Automatic flaked ice machine (Models RF-151-SC, RF-251-SC).

**Manufacturer:** Ross-Temp, Inc., Chicago, Ill.

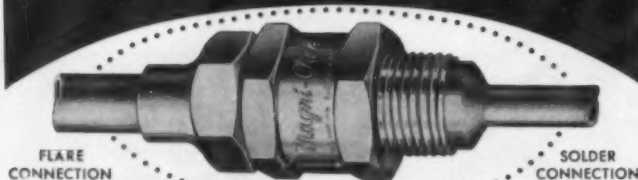
**Features:** Has removable front panel for carbonator pump and accessory installation, relocated bin and relay thermostat controls which allow easy adjust-



ment for all climate conditions, and recessed on-off switch. Capacities of 150 and 250 lb. Also offers king-size insulated ice bin and facilitates ease of drink dispensers on self-contained ice flakers. Only 38" high with adjustable legs and can be lowered to 34 1/2" when adjustable legs are removed. Low-boy cabinet permits operator to dispense drinks over top of machine.

circle 169 on reader service card

## MAGNI-CHEK VALVES with the T-S CONNECTION REDUCES YOUR INVENTORY



U.S. Pat. No. 2,646,071, 2,824,756

**MAGNI-CHEK IS A NON-ELECTRIC MAGNETICALLY OPERATED CHECK VALVE, AND INCORPORATES OUR T-S (THREAD-SOLDER) CONNECTION WHICH PERMITS YOU TO FLARE OR SOLDER EITHER END OF THE VALVE TO THE LINE.**

Magni-Chek incorporates no springs. A lifetime alnico magnet controls a floating disc which is drawn to a closed position when the pressure balances. Magni-Chek is so finely calibrated that a fraction of an ounce of pressure will open the passage permitting a smooth flow without the usual pressure drop. Available in 1/4", 3/8", 1/2" and 5/8".

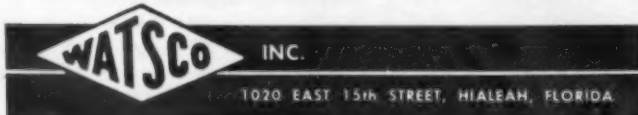
**NO BACK PRESSURE—NOT AFFECTED BY SOLDERING TEMPERATURES—MAY BE INSTALLED IN ANY POSITION**

### T-S CONNECTION

Basically the T-S connection is a standard male flare fitting with removable inserts for flare, solder or a combination of both. The inserts I.D. vary at each end permitting up to 16 different combinations each for installation of 3/8" and 1/4" valves and 9 combinations each with 1/2" and 5/8" valve.



For additional information see your wholesaler or write to department 3-4



circle 86 on reader service card

## Air filter-purifier

**Product:** "Roto Aire" air filter-purifier.

**Manufacturer:** Burke & Co., Los Angeles, Calif.

**Features:** Filter has replaceable media and purifier is activated charcoal. Both in single case for slide-in filter section of standard air handling unit, and are flexible.

circle 170 on reader service card

## Air cooler

**Product:** "Thunderbird" combination evaporative air cooler and air-cooled mechanical refrigeration unit.

**Manufacturer:** Caffers & Sattler, Los Angeles, Calif.

**Features:** Pre-cooled air from cooler is fed into condensing unit by blower, is 25 to 30 F below ambient temperature

Continued on page 93



# Help yourself to more information



You're ahead when you take time to find out what's new in refrigeration and air-conditioning.

Get the latest information that will make your business more efficient.

THE REFRIGERATION & AIRCONDITIONING BUSINESS invites you to use the handy reply cards attached to this form.

Fill out the card completely, circle numbers below the items you want more facts about, drop the card in the mail. We will do the rest.

Reader Service Card

Reader Service Card

Reader Service Card

April 1961

Do not use after July 15, 1961

## ADVERTISEMENTS

1 6 11 16 21 26 31 36 41 46 51 56 61 66 71 76 81 86 91 96 101 106 111 116 121 126 131  
2 7 12 17 22 27 32 37 42 47 52 57 62 67 72 77 82 87 92 97 102 107 112 117 122 127 132  
3 8 13 18 23 28 33 38 43 48 53 58 63 68 73 78 83 88 93 98 103 108 113 118 123 128 133  
4 9 14 19 24 29 34 39 44 49 54 59 64 69 74 79 84 89 94 99 104 109 114 119 124 129 134  
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135

## PRODUCT DATA

136 143 150 157 164 171 178 185 192 199  
137 144 151 158 165 172 179 186 193 200  
138 145 152 159 166 173 180 187 194 201  
139 146 153 160 167 174 181 188 195 202  
140 147 154 161 168 175 182 189 196 203  
141 148 155 162 169 176 183 190 197 204  
142 149 156 163 170 177 184 191 198 205

## USEFUL LITERATURE

206 213 220 227 234 241 248 255 262 269  
207 214 221 228 235 242 249 256 263 270  
208 215 222 229 236 243 250 257 264 271  
209 216 223 230 237 244 251 258 265 272  
210 217 224 231 238 245 252 259 266 273  
211 218 225 232 239 246 253 260 267 274  
212 219 226 233 240 247 254 261 268 275

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_  
STATE \_\_\_\_\_

## CHECK THE DESCRIPTION WHICH BEST FITS YOUR FIRM

☐ Architect ☐ Contractor-dealer  
☐ Wholesaler ☐ Consulting engineer  
Other: \_\_\_\_\_ (specify)

Card Invalid Without Company Name

April 1961

Do not use after July 15, 1961

## ADVERTISEMENTS

1 6 11 16 21 26 31 36 41 46 51 56 61 66 71 76 81 86 91 96 101 106 111 116 121 126 131  
2 7 12 17 22 27 32 37 42 47 52 57 62 67 72 77 82 87 92 97 102 107 112 117 122 127 132  
3 8 13 18 23 28 33 38 43 48 53 58 63 68 73 78 83 88 93 98 103 108 113 118 123 128 133  
4 9 14 19 24 29 34 39 44 49 54 59 64 69 74 79 84 89 94 99 104 109 114 119 124 129 134  
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135

## PRODUCT DATA

136 143 150 157 164 171 178 185 192 199  
137 144 151 158 165 172 179 186 193 200  
138 145 152 159 166 173 180 187 194 201  
139 146 153 160 167 174 181 188 195 202  
140 147 154 161 168 175 182 189 196 203  
141 148 155 162 169 176 183 190 197 204  
142 149 156 163 170 177 184 191 198 205

## USEFUL LITERATURE

206 213 220 227 234 241 248 255 262 269  
207 214 221 228 235 242 249 256 263 270  
208 215 222 229 236 243 250 257 264 271  
209 216 223 230 237 244 251 258 265 272  
210 217 224 231 238 245 252 259 266 273  
211 218 225 232 239 246 253 260 267 274  
212 219 226 233 240 247 254 261 268 275

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_  
STATE \_\_\_\_\_

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Other: \_\_\_\_\_ (specify)

Card Invalid Without Company Name

April 1961

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## ADVERTISEMENTS

1 6 11 16 21 26 31 36 41 46 51 56 61 66 71 76 81 86 91 96 101 106 111 116 121 126 131  
2 7 12 17 22 27 32 37 42 47 52 57 62 67 72 77 82 87 92 97 102 107 112 117 122 127 132  
3 8 13 18 23 28 33 38 43 48 53 58 63 68 73 78 83 88 93 98 103 108 113 118 123 128 133  
4 9 14 19 24 29 34 39 44 49 54 59 64 69 74 79 84 89 94 99 104 109 114 119 124 129 134  
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135

## PRODUCT DATA

136 143 150 157 164 171 178 185 192 199  
137 144 151 158 165 172 179 186 193 200  
138 145 152 159 166 173 180 187 194 201  
139 146 153 160 167 174 181 188 195 202  
140 147 154 161 168 175 182 189 196 203  
141 148 155 162 169 176 183 190 197 204  
142 149 156 163 170 177 184 191 198 205

## USEFUL LITERATURE

206 213 220 227 234 241 248 255 262 269  
207 214 221 228 235 242 249 256 263 270  
208 215 222 229 236 243 250 257 264 271  
209 216 223 230 237 244 251 258 265 272  
210 217 224 231 238 245 252 259 266 273  
211 218 225 232 239 246 253 260 267 274  
212 219 226 233 240 247 254 261 268 275

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_  
STATE \_\_\_\_\_

## CHECK THE DESCRIPTION WHICH BEST FITS YOUR FIRM

☐ Architect ☐ Contractor-dealer  
☐ Wholesaler ☐ Consulting engineer  
Other: \_\_\_\_\_ (specify)

Card Invalid Without Company Name

# Reader Service Card

FIRST CLASS  
PERMIT No. 8066  
CLEVELAND, OHIO

**BUSINESS REPLY MAIL**

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

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**The REFRIGERATION &  
AIRCONDITIONING BUSINESS**

**812 HURON ROAD**

**CLEVELAND 15, OHIO**



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**812 HURON ROAD**

**CLEVELAND 15, OHIO**



**Send  
For  
Product  
Data  
Now!**

FIRST CLASS  
PERMIT No. 8066  
CLEVELAND, OHIO

**BUSINESS REPLY MAIL**

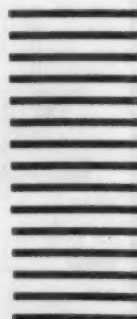
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY:

**The REFRIGERATION &  
AIRCONDITIONING BUSINESS**

**812 HURON ROAD**

**CLEVELAND 15, OHIO**



**IT'S  
FREE**

# "ROCKET" YOUR CENTRAL AIR CONDITIONING SALES WITH THIS TERRIFIC NEW G-E PROMOTION FOR '61!

**5 Complete New Advertising/Promotion Program.** Gives you everything you need to make '61 your biggest year ever! Here are just a few of the program's highlights.



**4 Attention-Getting TV Filmed Commercials.** A series of 40-second filmed commercials have been prepared to tie in directly with your newspaper advertising. They will be aired in markets across the nation with 20-second local dealer "tags."



\*\*\*\*\*

**3 Valuable Consumer Incentives** ... will again be offered to help stimulate both consumer and builder markets.



**2 Dealer Trip Incentive.** Again, in '61, there will be another fun-filled, all-expense trip for eligible dealers and their wives. Last year, 600 G-E dealers visited Bermuda. This year, the destination is... SPAIN!



\*\*\*\*\*

**1 Identification Program & Finance Plans.** To "spotlight" you as an alert, aggressive G-E dealer, an Identification Program has been developed that includes illuminated signs, letterheads, uniforms, etc. And nobody beats G.E. when it comes to financing! This is your bang-up G-E promotional package for 1961—everything designed to make your selling job easier, to make your profits *rocket*!



**FIRE...** off this coupon today and get ready for the greatest season yet! (Or contact your nearest General Electric heating and air conditioning distributor for full details.)

General Electric Company  
Air Conditioning Dept.  
P. O. Box 3236, Station A  
Tyler, Texas

RB-4

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
County \_\_\_\_\_ State \_\_\_\_\_

**GENERAL ELECTRIC**

Air Conditioning Department, Tyler, Texas

circle 33 on reader service card

# IMPORTANT



# ANNOUNCEMENT

to people who  
hear voices\*



\*voices that intrude or disrupt and noises that project when they should be hushed.

The new Aircoustat<sup>®</sup> Model W Return Air-Vent Silencers stop the transmission of noise without blocking air flow

Aircoustat Return Air-Vent Silencers eliminate the distracting sound of voices that spill from one area to another. Their slim design gives you a choice of installation. You can install them within a wall or ceiling or hang them on doors or walls. Let Koppers long experience in sound control help you. Write today for information to: KOPPERS COMPANY, INC., 3104 Scott Street, Baltimore 3, Maryland.



Model W  
Return Air-  
Vent Silencer

In sizes for all applications:

Model	Thickness	Width	Length
W-1	3 1/2"	30"	48"
W-2	3 1/2"	42"	48"
W-3	5"	30"	48"
W-4	5"	42"	48"
W-5	7"	30"	48"
W-6	7"	42"	48"



**SOUND CONTROL**  
METAL PRODUCTS DIVISION

<sup>®</sup> Engineered Products Sold with Service

circle 92 on reader service card



## Product DATA

Continued from page 90

and allows condenser to operate at low head temperature. Unit has 2- and 3-ton capacities, will perform rated Btu capacity regardless of outside ambient temperature. As example of use, 3-ton model, using air pre-cooled to 82 F, provides Btu output of 38,000, operates at head pressure of 253, and requires 3700 watts. Fan-type unit would operate at head pressure of 320 while needing 4100 watts, and delivering 33,500 Btu.

circle 171 on reader service card

### Damper regulator

**Product:** "Qudra-Matic" damper regulator.

**Manufacturer:** Elgen Mfg. Corp., Long Island City, N.Y.

**Features:** Has polyethylene sealer in quadrant handle which, when fitted on square end bearing of damper blade and set flush against side of duct, assures airtight contact seal. End bearing, knurled to hold sealer securely, turns freely on brass bearing in enclosed housing, eliminates hole-cutting, and cuts leakage at damper control area.

circle 172 on reader service card

### Electronic precipitator

**Product:** Residential electronic precipitator (Type UMT).

**Manufacturer:** Trion, Inc., McKees Rocks, Pa.

**Features:** Has capacity selector which allows dialing of output from 80,000 to 200,000 Btu heating or five tons cooling. Adapts to right or lefthand installation, floor mount or duct suspension, right or lefthand air flow.

circle 173 on reader service card

### Compact compressor

**Product:** Compact, high speed compressor ("Pee Wee").

**Manufacturer:** Danfoss, Inc., Lodi, N.J.

**Features:** Has 2-pole motor that operates at 3400 rpm, 60 cycles and



weighs only 18 lb. In 1/12, 1/10, 1/8, and 1/6 hp with rotor and stator mounted on and suspended from protection

Continued on page 96

circle 11 on reader service card

## GIVE YOUR WATER RUNNING ROOM

with  
**anco**



## Cooling Water Treatment

Water needs running room . . . it can't do its job when scale, rust, and other deposits build up on heat-exchange surfaces and in lines. Keep your cooling system free of clogging with specially formulated Anco Cooling Water Treatment.

Place can(s) recommended for your system in condenser pan or tower basin. Water agitation gradually dissolves contents, sending the components to work. One treatment lasts about a month, keeping your system operating with like-new efficiency. Ask your supplier today for details, or write us.

SPECIALISTS IN MAKING WATER BEHAVE



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Chemical Company, Inc.  
Box 1424 • Macon, Georgia



## FLAKED ICE MACHINES

### For Profitable Sales

### In A Growing Responsive Market

Market studies show flaked ice machine sales are zooming—and Ross-Temp is the line to sell because it has the sales features that people BUY. To list a few:

1. An ice harvester with only one moving part.
2. Waist high models that can slide under bars and counters or fit in modular equipment installations.
3. Capacities REALISTICALLY RATED for hot summer days.
4. Low operating cost.
5. A choice of 20 automatic models with daily capacities from 150 to 525 pounds.



Write or wire  
for Facts on how You  
can profit  
with Ross-Temp

## ROSS-TEMP, INC.

Subsidiary of Schneider Metal Manufacturing Co.

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## Don't blindfold him!

**T**HE MAN in this picture is a cancer research scientist. The device he is using looks like something out of science fiction—but actually, it's an electron microscope. It shows the sub-microscopic detail of a cancer cell—magnified 100,000 times. *The cost of one electron microscope is \$35,000.*

Some of the equipment needed for cancer research is even more expensive.

Today, in research centers throughout the country, 1300 scientists, supported by American Cancer Society funds, are at work searching for the cause of cancer—and, ultimately, ways to prevent it.

The American Cancer Society grants millions of dollars for research on such projects as the study of viruses as a possible cause of cancer—the development of hormone treatments for cancer—the control of cancer by drugs. *Life-and-death projects.*

Your help is needed to enable the American Cancer Society to continue this support.

Don't blindfold cancer research. Give to it. Send your contribution now, to CANCER, c/o your local post office. All gifts are tax-deductible.

**AMERICAN CANCER SOCIETY**





## Can you understand this man's hunger for Tools?

Without them he's useless—a burden to himself and the earth. ■ With tools in his hands—a spade, a hoe, a trowel, a rake—he could raise food enough for his own family and perhaps other hungry villagers. ■ But for this man and countless others like him in Greece, in India, in Latin America and other desperately poor areas—the simplest steel implements are beyond reach. They cost too much. So millions of acres are barely scratched...with forked sticks or wooden

ploughs...and two-thirds of the world's people still go to sleep hungry. ■ Will you help them till the fertile earth...through CARE? Wherever possible, CARE food distribution is coupled with a tools-for training program that enables men and women to become self-supporting. The need was never greater, the rewards never richer. ■ *Will you buy an extra tool*—to put into hands hungry for work, food, and dignity? ■ Send dollars to CARE, New York 16.

# CARE

COOPERATIVE FOR  
AMERICAN RELIEF  
EVERYWHERE, INC.  
660 FIRST AVE.  
NEW YORK 16, N.Y.

Here is \$\_\_\_\_\_ for food ☐ tools ☐  
books ☐ medicine ☐ CARE's choice ☐

(PLEASE MAKE CHECKS PAYABLE TO CARE, INC.)

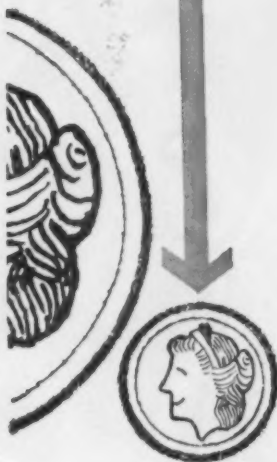
NAME \_\_\_\_\_

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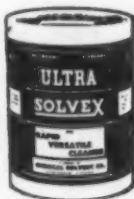


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long  
run!

when you specify  
**Ultra Solvex**

Extra tough cleaning jobs require extra tough cleaners. And ULTRA SOLVEX gets even the toughest jobs done. Although high quality ULTRA SOLVEX costs a little more per pound, it is less expensive in the long run. And it's safe too: safe to handle, safe for equipment. So always insist on a safe, fast, effective cleaner. Insist on ULTRA SOLVEX . . . a quality SOLVEX product.

**CHEMICAL SOLVENT CO.**  
BIRMINGHAM, ALABAMA



ASK  
YOUR  
WHOLESALE

circle 19 on reader service card

## Product DATA

Continued from page 93

springs. Lubrication by forced-feed oil system and motor cooling by suction gas. Control box has motor protectors, starting relay, and terminal panel.

circle 174 on reader service card

### Threading machine

**Product:** "Thred-O-Matic 22-A" pipe, conduit, and bolt threader.

**Manufacturer:** Collins Machinery Corp., Monterey Park, Calif.

**Features:** Has a totally-enclosed, automatic chuck, offset cutter on carriage for maximum visibility and accuracy. For makeup or teardown of fittings and offers



AN ADJUSTABLE RE-  
PLACEMENT FOR HER-  
METIC UNIT CONDENSER  
FAN ASSEMBLIES

THE  
**TRANSAIRE**  
MOTOR FAN BRACKET ASSEMBLY

The Transaire M.F.B. provides a single stock, all purpose solution to the replacement problem created by the great variety of condenser fans on all hermetic units.



- ADJUSTABLE TO WIDE VARIETY OF MEASUREMENTS—POSITIVE LOCKING AT ANY POSITION
- PERMITS USE OF ORIGINAL MOUNTING HOLES WITHOUT REFERENCE TO MODEL OR CATALOG NO.
- IMPELLER FAN AVAILABLE IN 4 DIFFERENT SIZES
- DUST PROOF MOTOR, RUBBER MOUNTED
- GUARANTEED FOR ONE YEAR

Write for details and prices (Give your wholesaler's name)

**TRANSAIRE MFG. CO.**

Div. of Penn Electric Motor Co., Inc.  
3080 Emerald St., Philadelphia 34, Pa.

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choice of mono, dual, or universal die heads with built-in automatic oil flow. Range is  $\frac{1}{4}$  to 2" in pipe and conduit and  $\frac{1}{4}$  to 2" in bolt.

circle 175 on reader service card

### Rooftop cooling unit

**Product:** Self-contained rooftop cooling unit.

**Manufacturer:** Curtis Mfg. Co., St. Louis, Mo.

**Features:** In 7½ and 10 ton sizes. Requires only one opening through roof for



supply-return air duct and needs no other ductwork or piping. Is enclosed in weatherproof housing of heavy gage embossed aluminum sheet, with no exterior painting.

circle 176 on reader service card

### Rotary drill-power hammer

**Product:** "Drill-Hammer" that converts a rotary drill to a power hammer for masonry anchoring.

**Manufacturer:** Rawlplug Co., Inc., New Rochelle, N.Y.

**Features:** Designed specially for fastening overhead fixtures, tool uses percussion drills serviceable until worn down to less than  $\frac{1}{2}$  original length. Attached to  $\frac{3}{8}$ " high speed rotary drill, is adjustable for holes in any hardness or thickness of masonry. Automatic clutch engages only when drill point touches masonry. Tool has rubber-covered handle and lubricant for cooler operation and longer life.

circle 177 on reader service card

### Tool cabinet

**Product:** Three-shelf tool stand cabinet.

**Manufacturer:** Bay Products, Inc., Philadelphia, Pa.

**Features:** Shelves each adjustable vertically on 2" centers. "T" door handle has built-in grooved key lock and heavy duty cabinet top can be working surface with flanges either up or down. Overall dimensions 21½ x 15½ x 33".

circle 178 on reader service card

### Environmental chamber

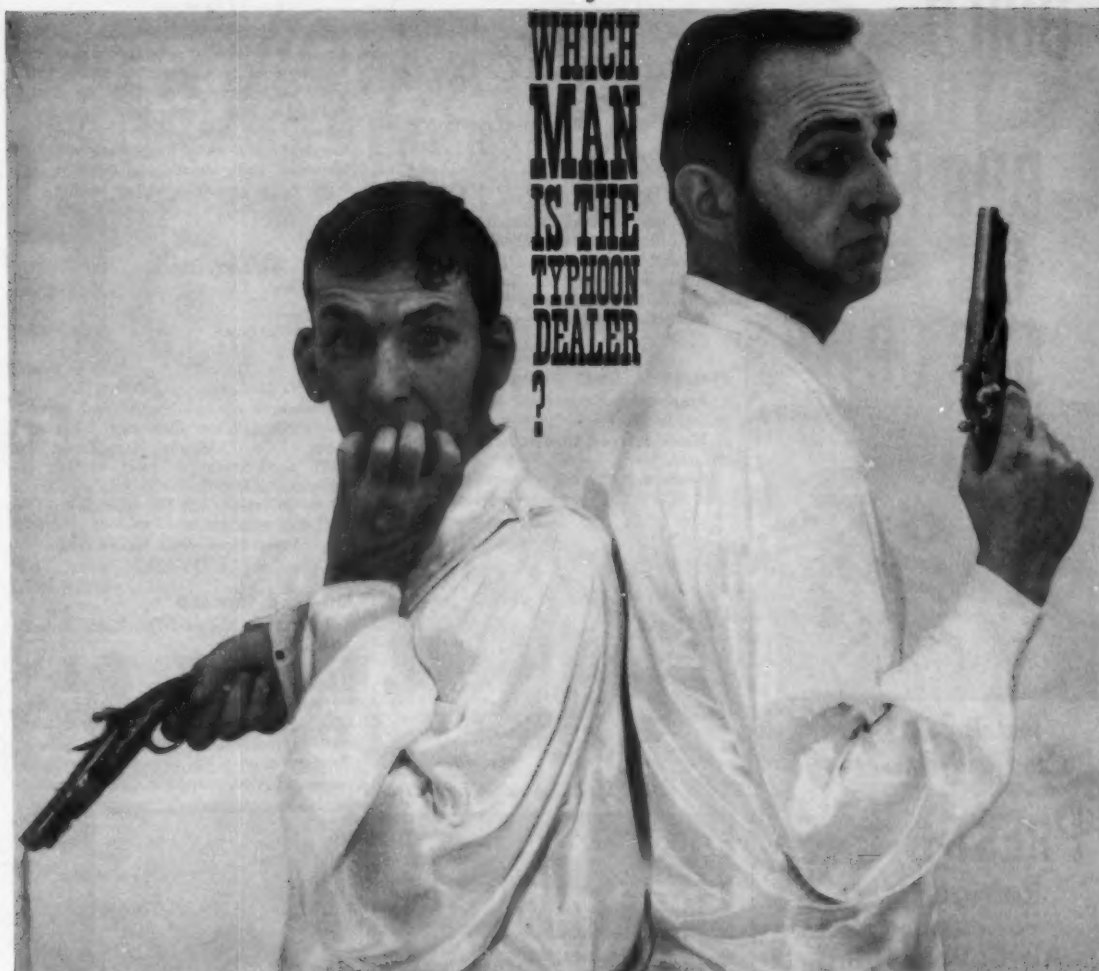
**Product:** Walk-in environmental chamber (Model WF).

**Manufacturer:** Webber Mfg. Co., Indianapolis, Ind.

**Features:** Has capacity of 2100 cu.ft. and provides temperature range of 300 to -125 F and humidity range of 20 to 95%. Inside unobstructed usable space is 15' left to right x 20' front to back x 7' high. Has thermal capacity of 56,000 Btu with less than 1 degree air stratification within interior. Programmed instru-

Continued on page 98





The smug looking fellow. He knows Typhoon for '61 is loaded for sales! He's got more ammunition than ever before—with 28 new units. Typhoon's 1961 line—the industry's biggest, broadest, most flexible line of packaged air conditioners, furnaces, heat pumps. Unmatched in versatility, too. Only Typhoon delivers customized units at little or no extra cost. Mass produced components are custom-assembled to your order. This gives you a tremendous competitive advantage, helps you sell without sacrificing profit. Typhoon for 1961 also delivers these outstanding benefits: • Financing and leasing plans to simplify payment by customers, relieve distributors of monetary strain. • Sales help on the local and national level. • "Prescription for Progress"—a new master plan and individual promotional kits to sell Commercial, Industrial and Residential Markets. • Exciting sales incentive programs offer bonus benefits for you and your family. • All the material for more sales power in 1961! Why settle for a pop gun when you can have an arsenal? Contact Typhoon today for complete information and a brand new Reference Wall Chart of the 1961 Line. Use the collect telegram in this ad, or call or write us.

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Typhoon Air Conditioning Division, Hupp Corporation 505 Carroll Street Brooklyn, New York	
Rush me full details on a Typhoon distributorship.	
(your name and address)	



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# BUILD YOUR BUSINESS ON \$43.00!



## Install • Service • Find and Fix Leaks with the PREST-O-LITE Refrigeration and Air Conditioning Outfit

This single compact kit costs only \$43, yet contains every essential piece of equipment for your work. You get three interchangeable open-flame stems to provide the right air-acetylene flame for soldering, brazing, or heating. Fit the sensitive leak detector stem to the same torch handle, and you can pinpoint the tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts of air. Compare that with soapy water!

In one sturdy carrying case, the kit also includes an adjustable gas pressure regulator, torch handle, and hose—everything for the installation, repair, and everyday maintenance of all types of refrigeration and air conditioning systems. See your local Prest-O-Lite dealer. Or write Linde Company, Division of Union Carbide Corporation, 270 Park Ave., New York 17, N.Y.

**LINDE  
COMPANY**



"Linde," "Prest-O-Lite," and "Union Carbide" are registered trade marks of Union Carbide Corporation.

circle 46 on reader service card

## Product DATA

Continued from page 96

mentation mounted on separate console, special frost-free viewing windows and portholes, and interior of type 304, No. 4 finish stainless steel. Exterior dimensions are 16'4" x 22'2" x 8'4".

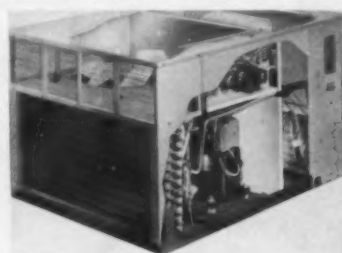
circle 179 on reader service card

### Hermetic heat pump

**Product:** Self-contained hermetic heat pump in two sizes.

**Manufacturer:** Lennox Industries, Inc., Marshalltown, Iowa.

**Features:** Cooling ratings at 23,000 and 35,000 Btuh with respective heating



ratings at 22,200 and 38,000 Btuh. Has four-mercury-bulb, automatic changeover heating-cooling thermostat: three bulbs with heat anticipation coils to control heating-cooling thermostat: three bulbs heat cycles, fourth bulb to keep reversing valve in position long as cycle required. Both indoor and outdoor coils have 4-row seamless copper tubing.

circle 180 on reader service card

### Small airconditioner

**Product:** One hp room airconditioner (301AC7).

**Manufacturer:** Admiral Corp., Chicago, Ill.

**Features:** Is a 7½ amp., 115 v. model with cooling capacity of 8600 Btu. Has thermostatic climate control and lifetime poly-sponge filter that can be rinsed clean. "Flex-O-Mount" installation kit with accordion-type sides permit instantaneous installation in windows from 27 to 36" wide. Kit for windows up to 44" wide optional.

circle 181 on reader service card

### Oil-fired furnace

**Product:** Oil-fired "Lo-Boy" furnace (Model L-OB).

**Manufacturer:** Air Conditioning Div., American-Standard, New York, N.Y.

**Features:** In four models, rated at 84,000, 95,000, 112,000, and 140,000 Btuh with either belt- or direct-drive blower. Primary control in burner uses heat-sensing device, responds directly to heat



of flame, eliminates on-the-job stack primary installation, and cuts soot, vibration, drafts, and stack corrosion. Measures 40½ x 54½ x 20 or 27".

circle 182 on reader service card

## NEW LOW-COST Dust-ban FILTER

The electrostatic action of Skuttle Dust-ban Filters guarantees the removal of dust, dirt and pollen particles, yet allows the free flow of air for maximum heating or cooling efficiency. They are completely washable and never need oiling. 6 popular sizes, \$4.95 each.



### FREE



Filter Gage (value \$1.95) is your tie-in for increased sales. Your customers will receive a free Skuttle filter gage with the purchase of 2 Skuttle Dust-ban Filters or \$1.00 with the purchase of 1 filter.

**Skuttle-Aire Washable Filters.** Designed for heavy-duty domestic, commercial and industrial applications. These sturdily built filters are easily washed with cold water and never need oiling.

Write today for complete information.



**Skuttle MANUFACTURING CO.**  
Milford, Michigan

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### Hot pan cooler

**Product:** "Flocold" hot pan cooler line expanded from eight to 19 models.

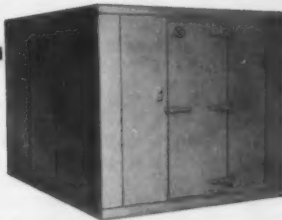
**Manufacturer:** Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc., Los Angeles, Calif.

**Features:** Range of product now from maximum 4800 to minimum 3400 Btu at 10 t.d. For product storage needing room temperature of 28-36 F. Heating pad prevents ice from forming in defrost pan. Has ¾" o.d. seamless copper tubing expanded into aluminum fins 48 per foot, heat exchanger, positive defrost drainage system, motors with automatic reset thermal overload protection.

circle 183 on reader service card

Continued on page 100

## NEW ... LA CROSSE SLASHES INSTALLATION COSTS!



YUKON  
WALK-IN  
COOLERS

Now ... the new La Crosse "EASE-O-MATIC" system of walk-in installation slashes costs. It's engineered for ease and speed of assembly ... only a hammer is needed to tightly and accurately position panels. Enlargement or dismantling of walk-in is also an easy, fast operation. All La Crosse "YUKON" Walk-Ins ... both high temperature and freezer units ... feature this new system.

WRITE TODAY ... for complete information.

**LA CROSSE COOLER COMPANY**  
3002 LOSSY BOULEVARD SOUTH, LA CROSSE, WISCONSIN



EXPORT OFFICE: 40 EAST 42nd STREET, NEW YORK • CABLE: EXPEDITE



Hold on there! Back up a bit: you just rushed by some pretty important information. Before you pass this copy of **THE REFRIGERATION & AIR-CONDITIONING BUSINESS** on to the next reader check it over once more. Did you spot the New Products Pages? How about this month's selection of free data books and catalogs? You'll find both listed on the Contents page. The handy Reader Service card will bring you details on any of them. Just fill it out and drop it in the mail.

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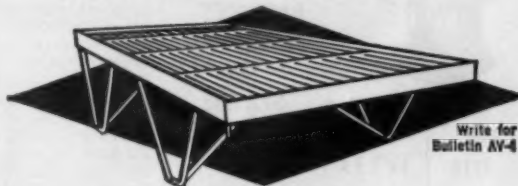


Write for  
Bulletin TT-653

### WATER COOLED COAXIAL CONDENSERS

*Domestic and sea water models*

Reduce costs 40% ... Reduce condenser water  
35% ... Reduce refrigerant charge ... Stabi-  
lize capillary performance ... Compact shapes.



Write for  
Bulletin AV-4

### AIRVEC

The completely silent Air Cooled Condenser

*Never needs cleaning*



Write for  
Bulletin MV-3

### MOTORIZED VALVES

For chilled water cooling systems and for heat-  
ing systems ... 100% positive shut-off ...  
Compact ... Low cost ... Low Voltage ... No  
current draw when open.



**EDWARDS  
ENGINEERING CORP.**  
1043-4 ALEXANDER AVENUE  
POMPTON PLAINS, NEW JERSEY  
TEmp 5-2808

"One of the nation's largest manufacturers of Residential and  
Commercial Boilers, Baseboard and Steel-Fin Radiation, Motor-  
ized Valves, Air and Water-Cooled Refrigerant Condensers."

# Product DATA

Continued from page 98

## Display case

**Product:** "Viewmatic" self-contained display case.

**Manufacturer:** Bastian-Blessing Co., Chicago, Ill.

**Features:** Colored plastic inserts for top and bottom available. Case is 48" wide and 63" long. Offers 1/2 hp con-

densing unit, adjustable glass shelf, manual or self-closing doors, fluorescent light and angled mirror back. Wall mounting strips for top and bottom included.

circle 184 on reader service card

## Temperature control

**Product:** Remote bulb temperature control (L-39T).

**Manufacturer:** General Controls Co., Glendale, Calif.

**Features:** Has switching action which opens and/or closes circuit when temperature rises. Sealed mercury switch actuated by temperature changes around temperature-sensing bulbs causes pres-

sure change within bulb, with change transmitted to bellows-actuated switch through attached capillary tube. Has both F and C scales. Temperature ranges from -20 to 450 F. Maximum bulb temperatures from 150 to 450 F.

circle 185 on reader service card

## Reaction dehydrator

**Product:** Chemical reactivating dehydrator for airconditioning systems from 3 to 100 hp.

**Manufacturer:** Federated Electronics, Inc., Jamaica, N.Y.

**Features:** When attached to pressure line of central system, includes acetylenogens, hellos capacitors, molecular aluminates. Dehydrator sends moisture-drying chemicals through system along with gases for efficient drying. The chemicals above, when working in combination, extract maximum amount of moisture from system.

circle 186 on reader service card

## Direct-draw dispenser

**Product:** Remote (Model CD 60R) and self-contained (Model CD 60SC) type "Custom" direct-draw dispenser.

**Manufacturer:** Nor-Lake, Inc., Hudson, Wis.

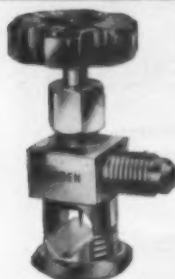
**Features:** Has hermetically-sealed 1/2 hp compressor, faucet stands with alu-



minum baffle, 3-keg cabinet, 22 gage galvanized steel interior, and 3" glass fiber cooler insulation. Both models are 39" x 28" x 60 or 82". Louvered stainless steel drain, installed valves and lines, water coil, and faucet are optional.

circle 187 on reader service card

## MORE SERVICEMEN PREFER MADDEN



BEST BUY  
FOR THE  
MONEY

1 VALVE  
PIERCES  
4 TUBE

HP-41



SIZES!

3/16" | 1/4" | 5/16" | 3/8"

DUO-TEST QUICK COUPLER  
CHARGING LINES

36" flexible line. Quick Coupler elbow on one end. Color coded in sets.



Stocked by leading wholesalers everywhere



**MADDEN BRASS PRODUCTS COMPANY**  
AURORA 2, ILLINOIS, U.S.A.  
EXPORT: AD AURIEMA, INC.  
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## "O.E.M. Engineered" . . . .

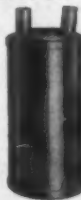
• by REFRIGERATION RESEARCH

- Products of Refrigeration Research are designed, engineered and built to the exacting requirements specified by original equipment manufacturers.
- These same high quality refrigeration supplies are now available through your wholesaler....look for the Bull Dog seal when you buy.

## SUCTION ACCUMULATOR

Compressor damage due to slugging ends once and for all with the installation of the Refrigeration Research Suction Accumulator.

Easily and quickly installed in the suction line just ahead of the compressor, it meters refrigerant and oil back to the compressor at a controlled rate....even though several pounds of refrigerant may suddenly return through the suction line....compressors go to work quietly and safely.



Driers - Receiver Driers - Receivers  
Accumulator Driers - Accumulators  
Suction Accumulators - Manifolds  
Heat Exchangers - Strainers - Mufflers



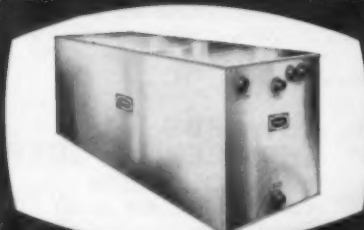
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REFRIGERATION RESEARCH

201 E. GRAND AVENUE BRANTFORD, MICHIGAN

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**Ice-Cel** DEPENDABLE  
AIR CONDITIONING

## LATENT HEAT STORAGE FOR AIR CONDITIONING

- CHURCHES
- MORTUARIES
- THEATRES
- OFFICES
- CAFETERIAS
- LODGE HALLS

• LOW INITIAL INVESTMENT • ECONOMICAL OPERATION

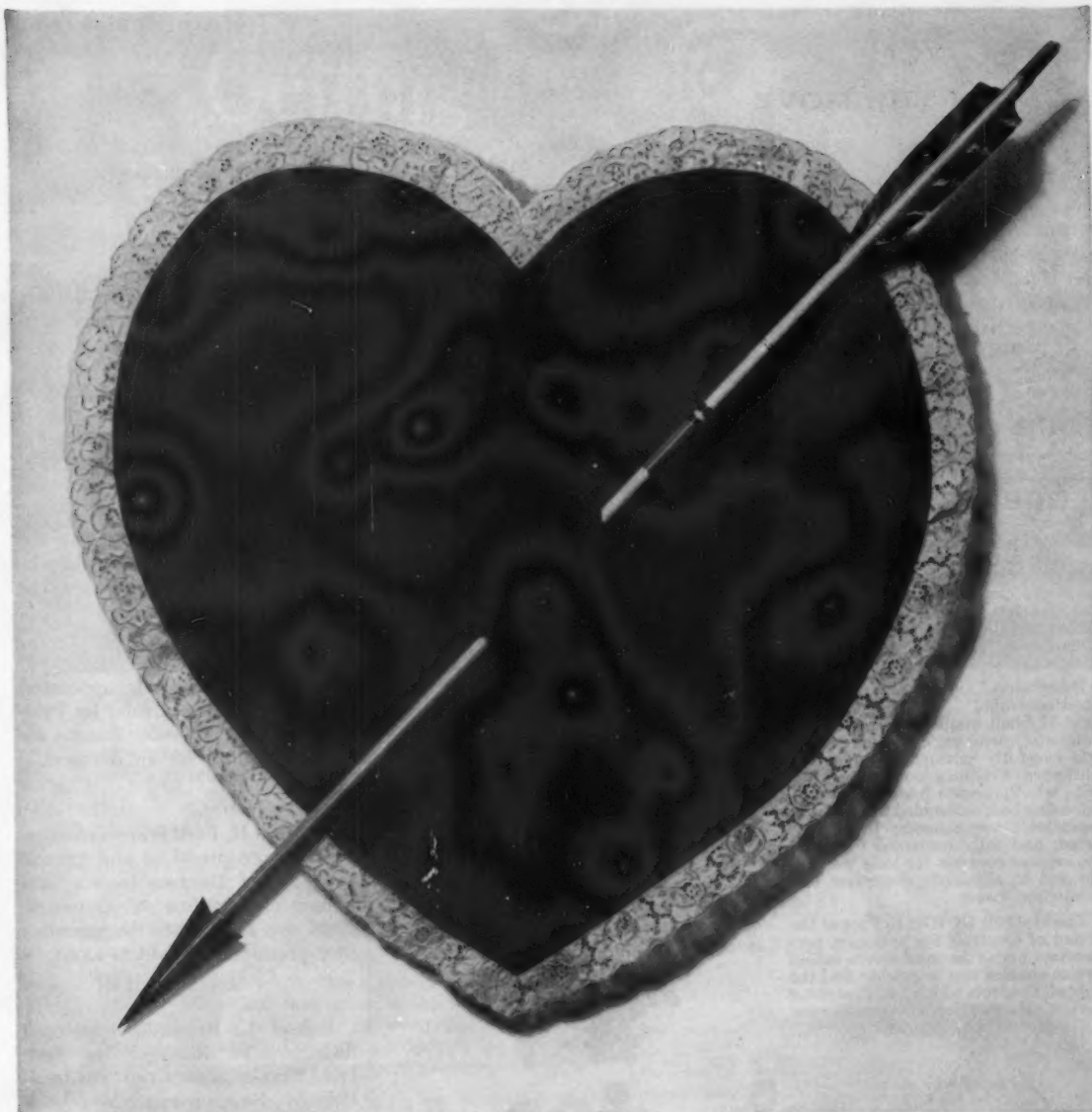
Write for Engineering Catalog BAE

**DOLE REFRIGERATING COMPANY**  
5942 NORTH PULASKI ROAD, CHICAGO 30, ILLINOIS  
103 PARK AVENUE, NEW YORK 17, N. Y.  
Dole Refrigerating Products Limited, 44 Elgin Street, Brantford, Ont.



circle 23 on reader service card





## WILL YOUR CUSTOMERS STILL LOVE YOU IN 1966?

Five years from now, will your air conditioning customers still be as satisfied with the equipment you're selling today? Or will they be disillusioned by poor performance and the high cost of operation and maintenance?

There's one sure way to keep your customers' affection—and keep your own cost of servicing low—and that's to install quality equipment . . . Chrysler equipment.

You can't put a price tag now on the extra value Chrysler's 25 years of air conditioning experience adds to every unit. But you can see the quality engineering features *standard* on Chrysler equipment for which your customers normally pay extra. And in 1966, you'll be able to compute the money you've saved on service calls . . . and count the Chrysler compressors that didn't fail.

One more question to ask yourself: Will the manufacturer of your present line even be in business five

years from now to supply parts and servicing? You know Chrysler will!

You owe it to your future profits, and your customers' confidence, to get the full story on Chrysler air conditioning and furnaces. Call your local Chrysler Distributor . . . today!



Chrysler Corporation, Airtemp Division, Dept. FK-41, Dayton 4, Ohio

circle 20 on reader service card

# People

## ON THE MOVE

Continued from page 68

Robert J. Krieg is appointed mid-west regional sales manager for Jet-Heet, Inc. His territory is from the Canadian border to Tennessee and west from Ohio to Iowa.

Richard H. Lewin, vice president and director of Cerro Corp., becomes president of Cerro's subsidiary, Cerro Sales Corp. He replaces A. Russell Merz, who resigned due to ill health Dec. 31.

Edwin M. Ott becomes manager of market planning at Pennsalt Chemicals Corp. He has served as manager of investment analysis and production manager, industrial chemicals division.

New advertising manager of Victory Metal Mfg. Corp. is Irwin A. Egendorf.

Dudley E. Heath is named staff coordinator of Arkla Air Conditioning Corp.

Lewin-Mathes Co., Div. of Cerro Corp. names managers for its newly-created regions in a recent realignment of its national sales organization. Lawrence I. Fries is northeast region manager; Robert A. Cook, north-central; John R. Fanning, midwest; and Guy L. Mendini, southeast.

Herbert H. Schellhas is appointed eastern district manager by Recold Corp. with headquarters in New York City.

Jack M. Johnsen is appointed manager, multi-vent sales for Pyle-National Co. He was eastern regional engineer for air diffusers.

Thomas H. Ford is appointed executive vice president and general manager of Danfoss Inc., a subsidiary of Danfoss of Denmark. Ford was assistant to the executive vice president at Fedders Corp.

Robert E. Regan is appointed district sales manager by York Div., Borg-Warner Corp. His territory is Pennsylvania, Maryland, Virginia, and Washington, D.C.

Theodore Davenport is appointed manager of planning and Robert R. Rhodes is named manager of sales at Worthington Corp.'s standard pump division.

Charles R. McConnor is partially retired as vice president, sales from Clarage Fan Co. Alfred L. Otis replaces McConnor as general sales manager. Following a leave of absence, McConnor will return to the company on special assignments.

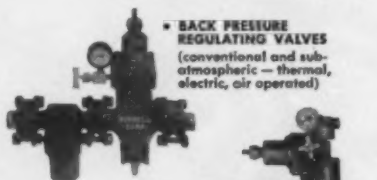
## YOUR GUIDE TO PROPER SELECTION of HUBBELL CONTROLS

Whatever your needs for CONTROLS for refrigeration, air conditioning, and industrial applications... Hubbell has the exact controls to solve your requirements... the exact controls designed, developed and manufactured to perform... service free... on all equipment.

Every step... from castings to finished controls... is under the most rigid Hubbell quality control specifications... with each detailed operation carefully performed by skilled craftsmen. Castings poured in Hubbell's wholly-owned foundry are precision finished; assembled with rugged, dependable components; thoroughly tested; and fully inspected to assure service free controls for long working life and to eliminate downtime and production losses.

The Hubbell GUIDE to Proper Selection of Controls for optimum performance under the most severe infield service enables you to quickly find the Hubbell Controls which add *plus value* to your refrigeration, air conditioning and industrial equipment.

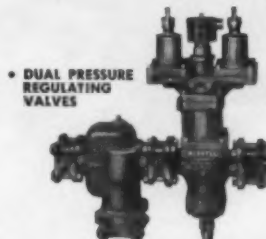
**CHECK THIS LIST OF HUBBELL CONTROL BULLETINS**... all full of informative data, specifications, etc. Write, on your letterhead, for copies.



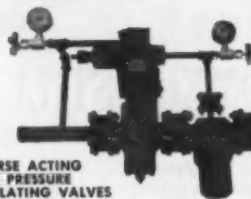
• BACK PRESSURE REGULATING VALVES (conventional and sub-atmospheric — thermal, electric, air operated)



• COMBINATION BACK PRESSURE REGULATING and STOP VALVES



• DUAL PRESSURE REGULATING VALVES



• REVERSE ACTING BACK PRESSURE REGULATING VALVES

• THREE WAY SOLENOID VALVE for ALL REFRIGERANTS... Ammonia, Freon 11-12-22, Carone 7



• SOLENOID VALVES for ALL REFRIGERANTS Ammonia, Freon 11-12-22, Carone 7... for Water, Brine, Oil, Gas and Chemicals

Hubbell engineers are well equipped to furnish you qualified recommendations for your refrigeration, air conditioning and industrial applications CONTROL problems. Send full details for specific answers Dept. 4-D



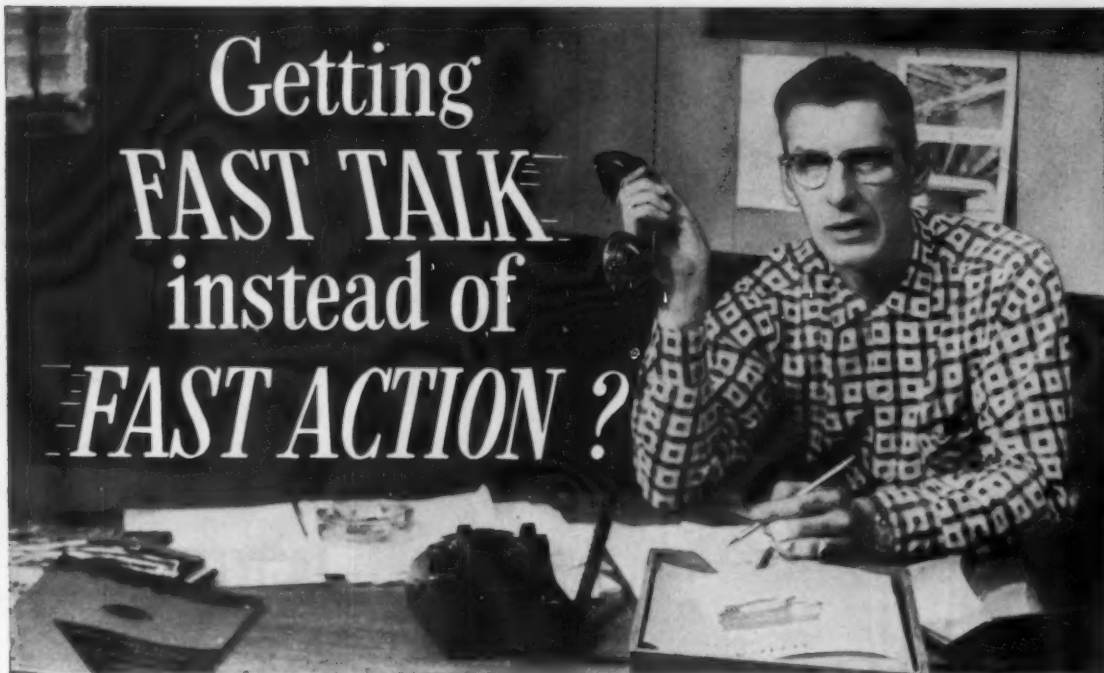
**HUBBELL CORPORATION  
MUNDELEIN, ILLINOIS**

- BACK PRESSURE REGULATOR VALVES • DUAL PRESSURE REGULATOR VALVES •
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- SAFETY RELIEF VALVES • 3-WAY REVERSING VALVES

"Casting to finished controls... every inch HUBBELL"

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# Getting FAST TALK instead of FAST ACTION?



As a heating-cooling dealer, you may have discovered the *performance* you get from certain suppliers doesn't always match their *promises* . . .

If so, it may pay you to take a good look at International!

In International you'll find a company that works closely with *all* its dealers, large or small. That's why there's a distributor and/or company representative stationed right in your area, *instantly available* when needed.

In International you'll find a company whose home office is geared for fast, positive action. That's why the line of communication between the factory and your nearby distributor is always open . . . to give you expert help on any sales or service problem.

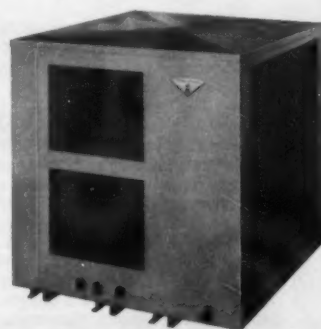
And in International you'll find a company that believes in a real working partnership between dealer and manufacturer . . . A company *big enough* to bring you every major technological advance . . . A company *small enough* to consider the growth of your business a matter of all-out importance.

Get full details today from International, the company that believes in providing Fast Action instead of Fast Talk. Write today to International Heater Co., Utica, N. Y., Dept. C-41.

## SPEED UP COOLING SALES WITH THE INTERNATIONAL LINE AIR-COOLED REFRIGERATION UNITS

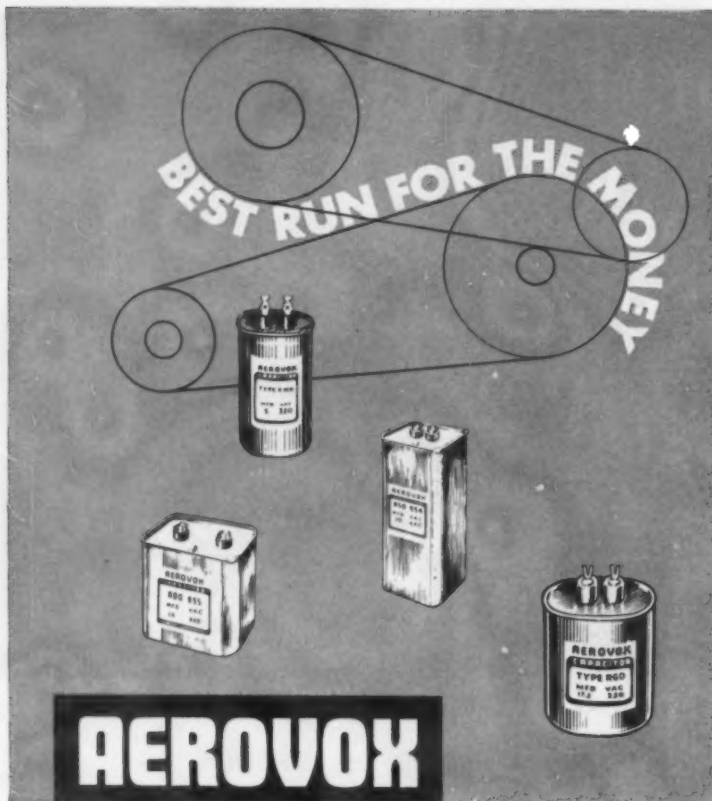
2, 3, **4** and 5-Ton Capacities

*Performance-  
proved in  
thousands of  
installations . . .  
easy to install*



GAS AND OIL HEATING  
COOLING  
ELECTRIC FURNACES  
AND HEAT PUMPS





## MOTOR-RUN Capacitors

Handle these motor-run capacitor replacement jobs faster, safer and more profitably by using Aerovox AC capacitors. You'll find just the capacity and voltage combination you need for a stay-put installation with a long service life.

Aerovox capacitors offer you the best run for the money because Aerovox supplies the major portion of all AC capacitors used by original equipment manufacturers in their motors, refrigerators and air-conditioners. Aerovox pioneered the manufacture of AC motor-run and motor-start capacitors and offers engineering know how second to none in the industry.

You can get the capacitors you need . . . when you need them . . . simply by calling on your local Aerovox Distributor. He stocks the complete line of Aerovox AC Capacitors, including hardware and instruments to help you meet the deadlines on those urgent repair jobs. While you're there ask for your copy of the Aerovox AC Capacitor Catalog (MS 59-10). Free only from your distributor. For the name and address of your nearest Aerovox Distributor write to . . .



## AEROVOX CORPORATION

DISTRIBUTOR DIVISION

NEW BEDFORD, MASS.

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OUTDOOR UNIT



INDOOR  
UNIT

## PRACTICAL EVEN IN COLDER CLIMATES!

### *Carrier 10 and 15 ton Heat Pump Weathermakers*

These new Carrier two-piece Heat Pump Weathermakers\* offer many advantages for heating and cooling factories, department stores, theaters, banks and restaurants. Their improved design, combined with the heat load from concentrations of light, people or machinery, makes it possible to operate them as economically in colder climates as many types of conventional systems.

An all-electric, air-cooled system, the Carrier Heat Pump Weathermaker requires no combustion fuel in winter and no water in summer. And because a single system handles both cooling and heating, there is an overall first-cost savings for many new buildings... as well as complete elimination of the normal expense resulting from seasonal start-ups and shutdowns. There is also space saving through the elimination of a boiler, smoke-

stack, water tower and fuel storage facilities.

To meet installation requirements, this two-piece Weathermaker offers a wide variety of arrangements. The indoor section may be suspended horizontally or vertically. Vertically, it may be hung from a wall or it may stand on the floor. Air distribution may be through ductwork or accessory plenum. The outdoor section, with its extremely low silhouette, is ideally suited for roof-top installation.

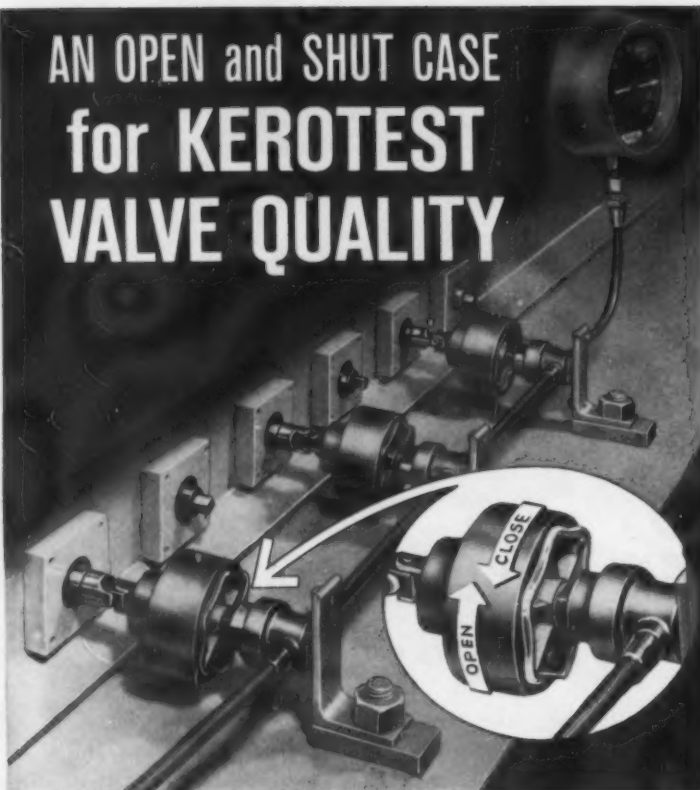
These Weathermakers are typical of the products constantly being introduced by Carrier to help our dealers corner the market. The products cover air conditioning, heating and heat pumps. Get the facts about a Carrier franchise from your Carrier distributor listed in the Yellow Pages. Or write Carrier Air Conditioning Company, Syracuse 1, New York.

\*Reg. U. S. Pat. Off.

**Carrier** Air Conditioning Company

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# AN OPEN and SHUT CASE for KEROTEST VALVE QUALITY



## TESTED and PROVED CONSTRUCTION

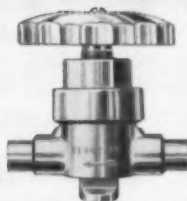
Kerotest engineers uncover vital performance data by opening and closing these valves a specific number of cycles per minute under controlled torque and pressure. Seating surfaces, materials and design features are checked periodically throughout the grueling test. Cycling stops and a final performance analysis is made only after one of the valve parts is destroyed on this Kerotest designed endurance testing device.

The trouble-free dependability and long life built into all Kerotest valves, fittings and accessories stem from more than a half dozen exacting quality control procedures. Kerotest valve performance under extreme operating conditions has been proven throughout the world for more than fifty years.

**ASK FOR KEROTEST VALVES  
AT YOUR LOCAL WHOLESALERS**

**KEROTEST MANUFACTURING CO.**

2504 Liberty Ave. • Pittsburgh 22, Pa.



**KEROTEST R224  
DIAPHRAGM PACKLESS LINE VALVE**

The high quality brass valve for all types of refrigeration and air-conditioning systems. Especially built for high vacuum service, liquefied petroleum gases, gasoline, instrument control panels, oxygen (degassed), compressed air, water, nitrogen and refrigeration boards.

### KEROTEST QUALITY CONTROLLED FEATURES

- Generous areas allow ample flow
- Durable, forged brass body and bonnet
- Beryllium copper and stainless steel diaphragms
- Nylon seat
- Positive back seating

Sizes 1/4" through 1 1/2"—Flare and ODS  
Maximum working pressure 750 psig

# KEROTEST

## BUSINESS *Briefs*

*Continued from page 6*

### American firm is formed by Danish manufacturer

A new American corporation, Danfoss, Inc., has been formed to supply equipment and controls for the airconditioning, heating, and refrigeration industries. Danfoss of Denmark is the parent company.

Equipment will include compressors, fuel pumps, and electrical starters. Control products include a complete line of temperature and pressure devices—expansion valves, solenoid, and thermostats.

Danfoss will distribute products specifically designed for the American markets, but they will be manufactured in Denmark at first. Permanent headquarters of American Danfoss are in Lodi, N.J.

### Vilter opens new office

A district sales office in Los Angeles, Calif., has been opened by Vilter Mfg. Co. to better serve its California customers. New manager is Joseph M. Lutes.

### Westinghouse Electric celebrates 75th birthday

Seventy-five years ago a young engineer started in business making electrical equipment. Today this business, Westinghouse Electric Corp., reports annual sales of \$1.9 billion.

As it celebrates its first 75 years, Westinghouse is moving into the atomic power field with the opening of Niagara Power Project, largest hydroelectric power source in the free world.

### Novi ends operations

Operations of Novi Equipment Co., Novi Sales & Service Co., and Novi Diesel Engine, Inc., have been discontinued, as announced by Adjustment Bureau, Credit Managers Association of Southern California.

Lewis M. Welch, president of

*Continued on page 108*

Chief Architect: Alfred Shaw, Chicago • Consulting Engineer: John Dalia, Chicago • Consulting Structural Engineer: Carl A. Metz, Chicago



## KRACK KEEPS FOOD HEALTHFUL AT McCORMICK PLACE

Refrigeration Contractors: RESCO Refrigeration Service, Inc., Chicago

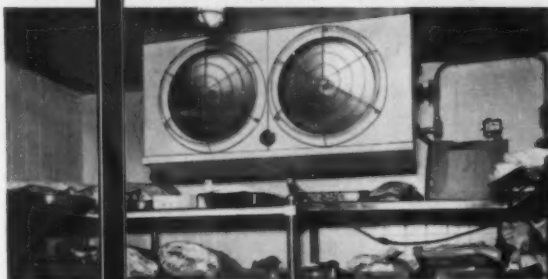
+32°

held in walk-in coolers and cutting rooms



-10°

held in meat, poultry and fish freezing rooms



Meat freezing rooms and walk-in coolers are each held at the proper balance of temperature and humidity to prevent shrinkage and protect the freshness and flavor of meat, fowl, fish and produce.

Automatic defrost units in the low temperature rooms keep products and premises free of frost and dripping icicles. Exclusive circuiting in the semi-circular unit coolers prevents coil "frost-up." These units also feature electrostatic air filters and full-size heat exchangers. Krack Unit Coolers are used exclusively in this installation.

### Advantages in specifying and installing Krack equipment

Krack has pioneered in electric defrosting since 1931. Certified capacity ratings guarantee equipment that matches each job. You gain advantages of lower bidding...no need for oversize equipment.



Free Bulletins Give All Performance Data . . . BUC-ED-120 for low temperature and SC-120 for high temperature refrigeration. Write or phone today!

## REFRIGERATION APPLIANCES, INC.

905 Lake Street, Chicago 7, Illinois • MONroe 6-1141

Manufacturers of Freon, or Ammonia, Recirculated, Flooded or Direct Expansion Heat Transfer Equipment Since 1931  
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## BUSINESS *Briefs*

*Continued from page 106*

the three Novi firms, hopes to resume manufacture and sale of Novi automobile airconditioners and a small-sized, lightweight diesel engine now under development by the corporation.

According to the bureau's bulle-

tin, Welch has asked his creditors for a 60-90-day moratorium while he continues negotiations for financing.

### **350 attend Tyler parley**

More than 350 delegates from U.S. and 10 foreign countries attended the third international congress held by Tyler Refrigeration Corp. in South Bend, Ind. Theme was "Merchandizing of Perishables."

Speakers at the 4-day convention

included Donn Mason, president of Salesmanship Institute of America; Thom Muir, executive vice president of Air Conditioning & Refrigeration Wholesalers Association; and Marie Lawton, executive-secretary of National Commercial Refrigerator Sales Association.

### **Hupp Corp. reorganizes into group operation**

Hupp Corp. has realigned its organization structure along group lines to get closer liaison between it and its 13 divisions.

Two group vice presidents have been elected by corporate directors. They are Anthony J. De Fino, general manager of Perfection Div., and Robert N. Ward, assistant to the president.

Both men are located at corporate headquarters in Cleveland, Ohio.

### **115 motor servicemen attend Spencer seminars**

Motor servicemen from New England, New York, and New Jersey attended the 2nd annual open house for the service industry sponsored by Spencer Products Group, Metals & Controls Div., Texas Instruments, Inc.

The 1-day event attracted 115 servicemen who sat through three seminars by Spencer personnel.

Following the open house, the New England chapter of National Industrial Service Association held its monthly meeting at Metals & Controls.

### **1960 sales estimated for room airconditioners**

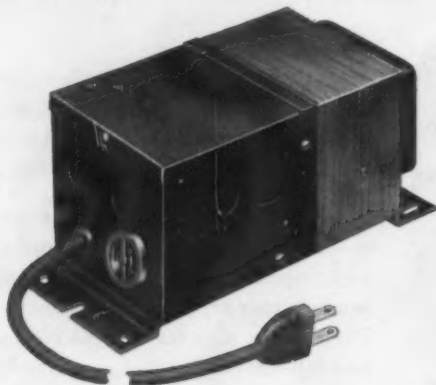
Estimates for manufacturer's sales of room airconditioners in 1960 is set at 1,521,300 units, according to National Electrical Manufacturers Association. This was down from 1,660,300 units in 1959.

NEMA reports December sales of 61,500 units, up from 47,600 in the same month of 1959.

All figures are based on expansion of data reported to NEMA's statistical department to cover total industry sales including exports of room airconditioners.

*Continued on page 110*

## **WRONG LINE VOLTAGE?** *Correct it...* **with an ACME ELECTRIC TAPPED WINDING TRANSFORMER**



Whenever the line voltage differs from the normal voltage required by the motor driven appliance, one of these Acme Electric Tapped Winding Transformers is the simplest and most economical means of correcting the problem.

For example: If only a 240 volt single phase circuit is available and the ½ HP motor of the air conditioner or other equipment is rated for 115 volts, a type T-32564 tapped winding transformer can be plugged into the line and will provide the exact voltage required. Or, if the available circuit is 208 volts and the 3 HP motor of the refrigeration compressor is rated at 230 volts, a type T-32610 transformer will solve the voltage problem. No need to do expensive re-wiring or order special motors.

Full details about the applications for Tapped Winding Transformers are contained in Bulletin 162. Write for your copy.

### **ACME ELECTRIC CORPORATION**

824 Water St.

Cuba, N. Y.

GAA 3421/1000

In Canada: Acme Electric Corp. Ltd. • 50 Northline Rd. • Toronto, Ont.

# **Acme Electric**

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# BENDIX-WESTINGHOUSE BACKS YOU UP WITH STRONG FIELD SUPPORT

Certainly, you'll agree. Next to product quality—few factors are more important to a manufacturer of refrigeration equipment than service support from his supplier. Here's the strong field support program Bendix-Westinghouse offers:



▶ **OVER 200 AUTHORIZED WHOLESALERS FROM COAST TO COAST:** This means—no matter where your customers are located, no matter where your installations are made—an authorized Bendix-Westinghouse wholesaler is close at hand.

▶ **COMPLETE ON-THE-SPOT REPLACEMENT INVENTORIES:** Our nation-wide wholesaler network maintains complete inventories of motor compressors, condensing units, and replacement electrical components.



▶ **EXPERIENCED ENGINEERING AND APPLICATION ASSISTANCE:** Available from our regional managers located in major cities throughout the U. S. and Canada. These representatives use modern instruction devices and are well-qualified either to render on-the-job assistance or to conduct educational meetings.

Our field support is just one more reason why Bendix-Westinghouse is your best buy in motor compressors and condensing units. Get full details today.

## ***Bendix-Westinghouse***

**EVANSVILLE, INDIANA**

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.; Peter A. Karl, Inc., Union Station Bldg., Ullica 2, N. Y.; Sobel-Kielmann, Inc., 15 William St., New York 5, N. Y.

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## BUSINESS *Briefs*

Continued from page 108

### Flexible Tubing honors 2

Two men were honored recently as joint recipients of the "Man of the Year" award for 1960 at Flexible Tubing Corp.

Wesley L. Guiles and Paul W. Roush and their wives will receive

all-expense paid trips to Bermuda or Nassau as their reward. Guiles is northeastern regional sales manager, technical products division; Roush is manager of product development.

### Idaho Maryland sells half of Liquefreeze Corp.

Purchase of 50% of Liquefreeze Corp. of America from Idaho Maryland Industries Inc. has been made by Ward Industries Corp. for \$1.2 million. M. J. Leonard,

formerly executive vice president of IMI, becomes president of Liquefreeze.

Headquarters for Liquefreeze will be established in Glendale, Calif., with an eastern sales office to be maintained in New York City.

This partial sale of Liquefreeze grew out of original plans to merge Ward and IMI. These plans, however, were suspended pending solution of problems that arose during final merger negotiations.

### Hong Kong chosen site for Worthington meeting

Worthington Corp. has picked Hong Kong as the site for its 3rd International Air Conditioning and Refrigeration conference, scheduled to start April 23.

Distributors from at least 25 countries are expected to attend the 7-day meeting. Worthington feels the selection of Hong Kong reflects the growing importance of Southeast Asia and the Far East as markets.

### Special test laboratory started for Delco Div.

A specially designed and constructed laboratory for developing and testing new home conditioning equipment is in operation at Delco Appliance Div., General Motors Corp., in Rochester, N.Y.

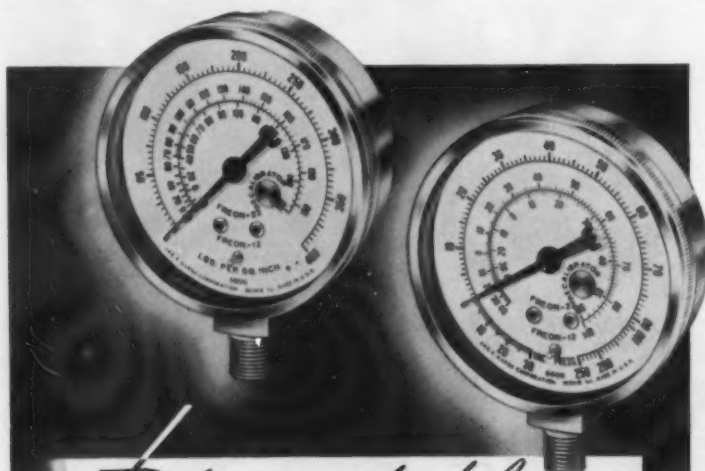
The lab, which occupies 4000 sq. ft. of floor area, is designed for future expansion. It consists primarily of two adjacent, moisture-proof test rooms, both completely insulated.

Room temperatures can be held within 0.3% accuracy, and range from -20 to 140 F with relative humidity controllable from 20 to 95%. The second room, called the "inside room", is conditioned to simulate conditions in the average home or building. Temperature range is from 70 to 104 F, with relative humidity from 20 to 95%.

Preliminary tests indicate that cooling units and heat pumps up to 10-ton capacity can be tested in the new lab.

The "outside room" has been designed with large refrigerator doors and may be used as a cold room.

Continued on page 112



## Testing set deluxe-

Instrument beauty! Not just outward beauty. Beauty that runs deep. The beauty of quality and precision...all the way through.

Polished brass cases with sparkling bevelled glass crystals held in knurled threaded rings that give ready access to the "Recalibrator"...so vital in a testing instrument. Two scales in color marked in corresponding temperatures of R-12 and -22. Precision movements that deliver the remarkable accuracy of plus or minus 1% of dial reading.

Compound gauge now has longer (0-80 lbs.) retard scale—and increased maximum reading...to 250 lbs. Range of pressure gauge also increased...to 400 lbs.

So much more for so little more! Own them proudly. Use them proudly. To fully appreciate them, *see them.*

—at your wholesaler

MARSH INSTRUMENT COMPANY, Dept. P, Skokie, Ill. Division of Colorado Oil and Gas Corporation • Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103 St., Edmonton, Alberta • Houston Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Texas • Eastern Seaboard Warehouse: Marsh Instrument Company, 1209 Anderson Ave., Fort Lee, N.J.

# MARSH

Refrigeration Instruments

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**Model 701  
Thermocouple Gauge  
Control**

**Port-a-Vac  
Portable Vacuum  
Pump**

## — THE NEW NRC PORTABLE VACUUM PUMPING UNIT THAT DUPLICATES FACTORY DRYING METHODS

Eight years' experience in the factory and 3 years in field service have proven that evacuation to approx. 50 microns with NRC equipment is your best insurance against compressor failure especially during "in-warranty" period.

The new NRC portable hand-carried unit has three essential advantages:

1. Consistently pumps down even the wettest systems to approx. 50 microns without oil changes.
2. Accurately measures vacuum with a dependable electronic gauge which also serves to check for leaks in the system.
3. It is portable and self-contained; especially designed for field use.

The NRC Port-a-Vac is superior because the 2-stage 100% gas ballast feature is built-in and is not an adaptation to an ordinary pump. The NRC unit will consistently pump more water vapor than any other pump without contaminating the pump oil. Experience has shown that this unit can save enough in service calls to pay for itself within a year.

This is the same NRC Model 2D Gas Ballast Pump that has been used so successfully by installation and service contractors for over three years. Now specially packaged for portability and convenience.

Available through your refrigeration-air conditioning wholesaler from coast to coast.



A Subsidiary of National Research Corporation  
180 Charlemont Street, Dept. 32D  
Newton 61, Massachusetts

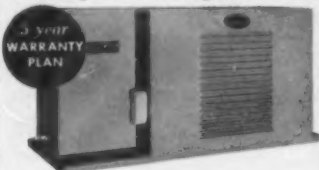
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## Custom engineered **TEMPRITE** REMOTE WATER COOLERS

...offer refrigeration men  
greater flexibility of  
application and increased  
profit opportunities...



This completely packaged refrigerating unit can be installed overhead... behind a wall... or under a counter. Widely used in factories, restaurants, motels, schools, etc.; or as a pre-cooler for beverage dispensers; as a capacity booster for ice-cube-making machines, for industrial process cooling, etc.



(Above) Temprite Remote Water Coolers in four models: R-6, R-14, R-17W, R-24W.

A complete line of TEMPRITE self-contained water coolers, wall fountains and accessories also available. (Model WF-4000 Wall Fountain illustrated.)

Consult Yellow Pages under "Water Coolers" or write for literature and distributor's name.

Manufactured under rigid quality control by  
**TEMPRITE PRODUCTS CORPORATION**

BOX 72B, BIRMINGHAM, MICHIGAN

Rush me details on Temprite Remote Water Coolers.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

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## BUSINESS *Briefs*

Continued from page 110

### EXPANSIONS

Sept. 1 is completion date set for a 23,000-sq.ft. plant and office building for Imperial-Eastman Corp. Ltd. in Barrie, Ontario. Charles McNellis has been appointed vice president and general manager of the new operation.

Business is already underway at General Controls Co.'s new offices in Denver, Colo. Location is 2323 West 2nd Ave.

Harold T. Hunt has been named manager of the west coast manufacturing plant for McQuay, Inc. at Visalia, Calif. Construction of the plant, third for the firm, has been started under Hunt's supervision.

Bell & Gossett Co. has completed construction on 32,000 sq.ft. of manufacturing space in Morton Grove, Ill., for its line of package liquid coolers and air compressors. The new building also contains in-process warehousing space and a test area for refrigeration and air-conditioning units.

Berko Electric Mfg. Corp. has opened its new plant in Jamaica, N.Y. This is the firm's third plant expansion.

Ace Pump Co. has moved into a new building in Memphis, Tenn. It is located in the city's Presidents Island Harbor and industrial area.

### SALES FIGURES

Sales volume for Remington Air Conditioning Div., Remington Corp. was up 50% in 1960 over 1959. Officials say the \$3.1 million volume was due to firm's new incremental system of airconditioning for multi-room structures.

Net sales for Tyler Refrigeration Corp. in 1960 were \$23,887,109, an increase of more than \$3.5 million.

A drop of \$4 million in net sales for American Potash & Chemical Corp. in 1960 reflected a lower volume in the firm's defense business, corporation officials report. However, the company showed the greatest earnings in history.

### ASSOCIATIONS

Six new logos have been designed and released for use by members of National Warm Air Heating and Air Conditioning Association. These emblems declare support of the "Silver Shield" program.

Tenth indoor comfort bureau is licensed in Memphis, Tenn. by National Warm Air Heating and Air Conditioning Association.

## SAVE

### DRYERS

- 2 cu. in. of FA-400
- Silica Gel
- Complete acid removal
- Low end-point drying

### STRAINERS

- Almost 2 sq. in. of 150 mesh metal



SPECIAL DESIGN MAKES  
INSTALLING, ADJUSTING,  
AND SERVICING A "ONE-  
STOP" JOB!

CAP TUBES give perfect results "as is" for all units to 1/5 H.P., freezers to 1/3 H.P., and water coolers to 1/4 H.P.

FOR BEST RESULTS specify No. 698-S2/F2. Strainer-Cap tubes and No. 699-S2/F2. Dryer-Cap tubes.

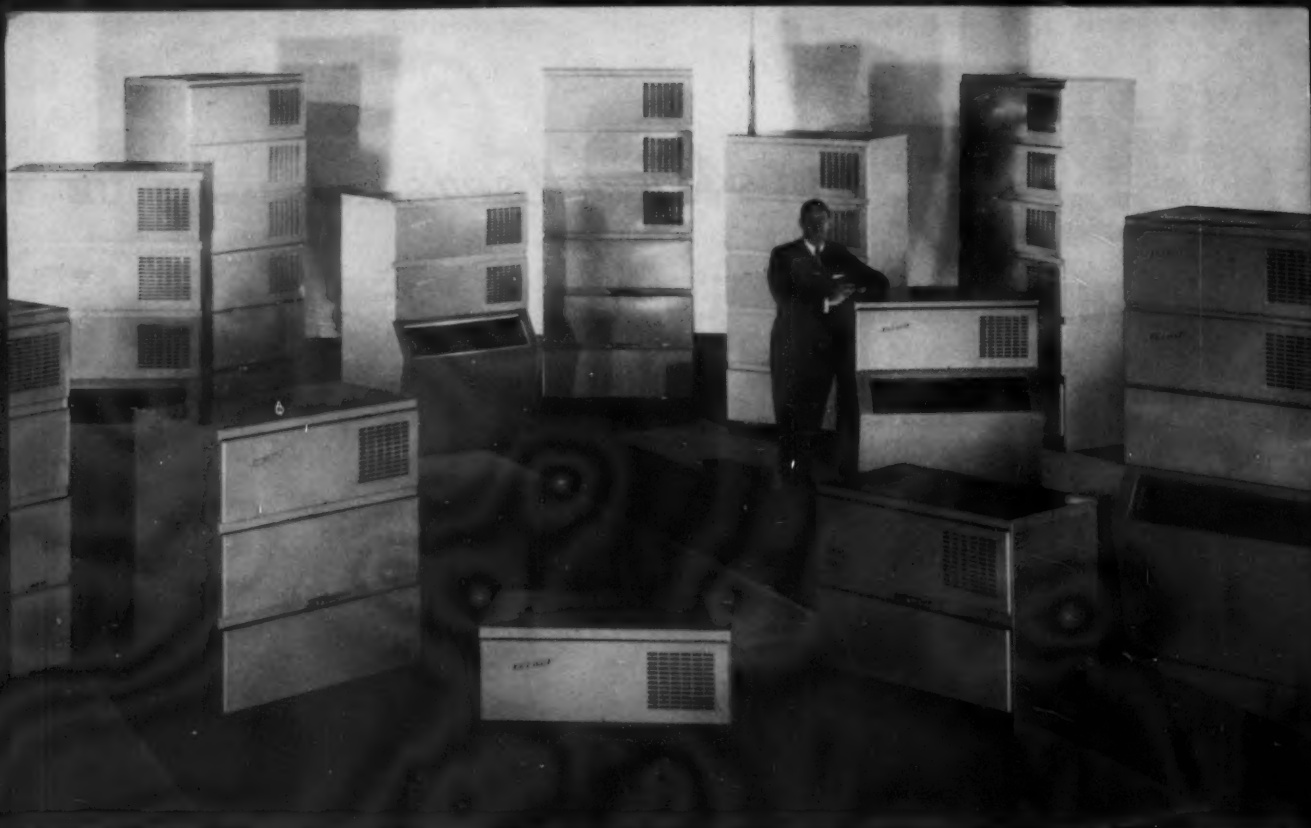
SPECIAL COMBINATIONS are available for use up to 3/4 H.P. for R-12 and R-22.

## WABASH CORP.

EXPORT 2300 S. Western Ave., Chicago 8, Ill.  
DEPT. 13 E. 40th St., New York 16, N. Y.

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SHOWN: A few of the tremendous line of 120 Kold-Draft ice cubers.

## 120 Different models to choose from... Only by \*KOLD-DRAFT

• ALWAYS A PERFECT CUBE  
... CLEAR ... PURE ... SOLID

• COMPLETELY FLEXIBLE  
... ADD-A-UNIT FEATURE

• GUARANTEED  
CAPACITY RATINGS

The unique Add-A-Unit feature of Kold-Draft ice bins and ice cubers afford unsurpassed flexibility in ice making and bin capacity, and allows expansion of either or both as your business grows . . . automatic ice crusher is available for most models . . . its compactness permits use where space is extremely limited . . . all models available in beautiful Pearl-tone grey baked-on enamel or stainless steel . . . air cooled combination air/water, or straight water . . . a model to fit all requirements whether large or small . . . send coupon for full information.

\*TRADEMARK REG. U.S. PAT. OFF.

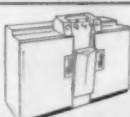
KOLD-DRAFT DIVISION

UNIFLOW MANUFACTURING COMPANY • ERIE, PENNSYLVANIA

A complete  
line of  
refrigeration  
products  
from  
**ONE**  
reliable  
source



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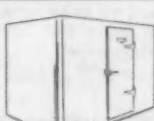
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BEVERAGE COOLERS



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KOLD-VUE  
BEVERAGE  
MERCHANDISERS

TOM MARTIN, Sales Manager  
KOLD-DRAFT DIVISION  
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YES, we are interested in distributing Kold-Draft ice cubers . . . please  
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# QUICK CLEAN

WITH

**SURE KLEAN**

NUM 70 BER

## ICE MACHINE CLEANER AND STERILIZER



**REMOVES  
SCALE  
THOROUGHLY,  
QUICKLY... &  
STERILIZES  
TOO!**

Actual photograph  
of an auger taken  
from Flaker Ice  
Machine. The bottom  
half was immersed  
in SURE KLEAN Ice  
Machine Cleaner  
and Sterilizer...  
and came out  
bright and sterile!

## SURE • SAFE • EASY ECONOMICAL

As every serviceman knows, the biggest bogey with ice machines is scale. But at last, there is SURE KLEAN No. 70, a cleaner which sterile cleans... easily, safely, economically! SURE KLEAN No. 70 leaves no toxic residue, completely removes all germs, odors, contamination of any kind, and may be used as often as necessary without damaging equipment. And SURE KLEAN No. 70's harmless red dye, known as the Red Safety Factor, completely eliminates all guesswork in timing the job. When all pink traces are removed and the ice is firm and crystal clear... the solution has completed the job and the unit is sterile and ready for use.

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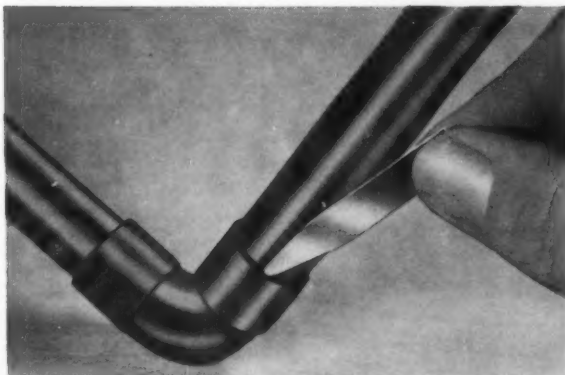
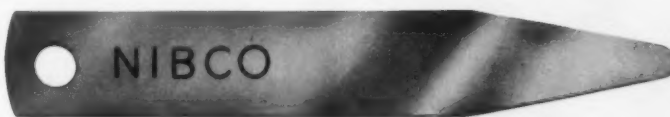
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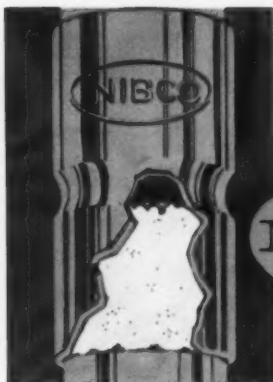
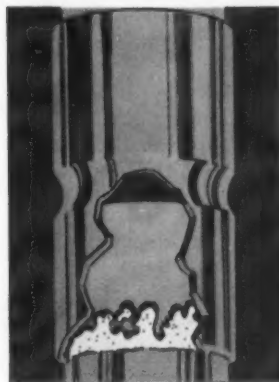
# THE MESSAGE OF THIS AD IS ON THE EDGE OF THE PAGE!



Take a look at the edge of this page. Better still, tear it out and join top and bottom to form a cylindrical tube. Now, look. The edge is pretty hard to see. And, so is the soldering clearance in a properly made fitting for copper tubing. The thickness of this page is approximately the same as the maximum clearance of .003" around a  $\frac{1}{4}$ " through  $\frac{1}{4}$ " fitting. If the clearance becomes just a little more than .001" greater all around, a proper solder bond becomes doubtful. The space is then getting too large for capillary action to carry solder the full depth of the cup. The difference between a NIBCO fitting and one that is too large may be almost microscopic, but it can be the difference between success and failure. Moral: ASK FOR NIBCO!

## SEND FOR FREE TESTER

As shown at left, you can quickly determine whether soldering clearance is too great by using the NIBCO JOINT TESTER. If the tip of it can be slipped into the clearance between tube and fitting . . . something is wrong! To obtain your free NIBCO JOINT TESTER, mail coupon below.



**DEPTH OF SOLDER PENETRATION** drastically affects the breaking load of the joint. When you have solder penetration of only one-third the cup depth of a  $\frac{1}{4}$ " fitting, the breaking load will be approximately 2100 lbs. Solder penetration of the entire cup depth, however, raises the breaking load to approximately 7000 lbs.!

# NIBCO



MEMBER

**NIBCO INC.**  
Dept. L-6904 Elkhart, Indiana

Please send free NIBCO JOINT TESTER to check soldering clearances between tube and fittings.


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firm \_\_\_\_\_

address \_\_\_\_\_

city, state \_\_\_\_\_

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"Well, maybe  
that's it . . . but are  
you sure it will do  
the trick?"

"No doubt about it!  
I saw one just like it in  
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AIRCONDITIONING  
BUSINESS**

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